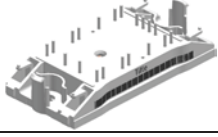
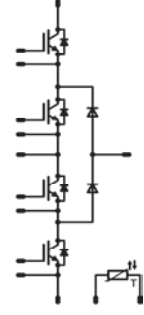


flowNPC0	600V/75A
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; background-color: #003366; color: white; margin: 0;">Features</p> <ul style="list-style-type: none"> Neutral-point-Clamped inverter Clip-In PCB mounting Low Inductance Layout </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; background-color: #003366; color: white; margin: 0;">Target Applications</p> <ul style="list-style-type: none"> UPS and Solar </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #003366; color: white; margin: 0;">Types</p> <ul style="list-style-type: none"> 10-FZ06NIA075SA-P926F33 </div>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; background-color: #003366; color: white; margin: 0;">flow0 housing</p>  </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #003366; color: white; margin: 0;">Schematic</p>  </div>

Maximum Ratings

$T_j=25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Condition	Value	Unit
Buck IGBT				
Collector-emitter break down voltage	V_{CES}		600	V
DC collector current	I_C	$T_j=T_{j,max}$ $T_n=80^\circ\text{C}$ $T_c=80^\circ\text{C}$	64 80	A
Pulsed collector current	$I_{C,pulse}$	t_p limited by $T_{j,max}$	225	A
Power dissipation per IGBT	P_{tot}	$T_j=T_{j,max}$ $T_n=80^\circ\text{C}$ $T_c=80^\circ\text{C}$	111 168	W
Gate-emitter peak voltage	V_{GE}		± 20	V
Short circuit ratings	t_{SC} V_{CC}	$T_j \leq 150^\circ\text{C}$ $V_{GE} = 15\text{V}$	6 360	μs V
Maximum Junction Temperature	$T_{j,max}$		175	$^\circ\text{C}$
Turn off safe operating area		$T_j \leq 150^\circ\text{C}$ $V_{CE} \leq V_{CES}$	150	A
Buck FWD				
Peak Repetitive Reverse Voltage	V_{RRM}	$T_j=25^\circ\text{C}$	600	V
DC forward current	I_F	$T_j=T_{j,max}$ $T_n=80^\circ\text{C}$ $T_c=80^\circ\text{C}$	56 76	A
Repetitive peak forward current	I_{FRM}	t_p limited by $T_{j,max}$ $T_c=100^\circ\text{C}$	150	A
Power dissipation per Diode	P_{tot}	$T_j=T_{j,max}$ $T_n=80^\circ\text{C}$ $T_c=80^\circ\text{C}$	70 107	W
Maximum Junction Temperature	$T_{j,max}$		175	$^\circ\text{C}$

Maximum Ratings

 $T_j=25^{\circ}\text{C}$, unless otherwise specified

Parameter	Symbol	Condition	Value	Unit
Boost IGBT				
Collector-emitter break down voltage	V_{CES}		600	V
DC collector current	I_c	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	64 80	A
Pulsed collector current	I_{cpuls}	t_p limited by T_{jmax}	225	A
Power dissipation per IGBT	P_{tot}	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	111 168	W
Gate-emitter peak voltage	V_{GE}		± 20	V
Short circuit ratings	t_{SC} V_{CC}	$T_j \leq 150^{\circ}\text{C}$ $V_{GE} = 15\text{V}$	6 360	μs V
Maximum Junction Temperature	T_{jmax}		175	$^{\circ}\text{C}$
Turn off safe operating area		$T_j \leq 150^{\circ}\text{C}$ $V_{CE} \leq V_{CES}$	150	A

Buck and Boost Inverse FWD

Peak Repetitive Reverse Voltage	V_{RRM}	$T_c=25^{\circ}\text{C}$	600	V
DC forward current	I_F	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	54 77	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}	150	A
Power dissipation per Diode	P_{tot}	$T_j=T_{jmax}$ $T_h=80^{\circ}\text{C}$ $T_c=80^{\circ}\text{C}$	70 107	W
Maximum Junction Temperature	T_{jmax}		175	$^{\circ}\text{C}$

Thermal Properties

Storage temperature	T_{stg}		$-40 \dots +125$	$^{\circ}\text{C}$
Operation temperature under switching condition	T_{op}		$-40 \dots +(T_{jmax} - 25)$	$^{\circ}\text{C}$

Insulation Properties

Insulation voltage	V_{is}	$t=2\text{s}$ DC voltage	4000	V
Creepage distance			min 12,7	mm
Clearance			min 12,7	mm

Characteristic Values

Parameter	Symbol	Conditions					Value			Unit
		$V_{GE}[V]$ or $V_{GS}[V]$	$V_r[V]$ or $V_{CE}[V]$ or $V_{DS}[V]$	$I_c[A]$ or $I_F[A]$ or $I_b[A]$	T_j	Min	Typ	Max		
Buck IGBT										
Gate emitter threshold voltage	$V_{GE(th)}$	$V_{CE}=V_{GE}$			0,0012	$T_j=25^\circ C$ $T_j=125^\circ C$	5	5,8	6,5	V
Collector-emitter saturation voltage	$V_{CE(sat)}$		15		75	$T_j=25^\circ C$ $T_j=125^\circ C$		1,58 1,83		V
Collector-emitter cut-off current incl. Diode	I_{CES}		0	600		$T_j=25^\circ C$ $T_j=125^\circ C$			30	μA
Gate-emitter leakage current	I_{GES}		20	0		$T_j=25^\circ C$ $T_j=125^\circ C$			700	nA
Integrated Gate resistor	R_{gint}							none		Ω
Turn-on delay time	$t_{d(on)}$	Rgoff=8 Ω Rgon=8 Ω	± 15	350	75	$T_j=25^\circ C$		144		ns
Rise time	t_r					$T_j=125^\circ C$		145		
Turn-off delay time	$t_{d(off)}$					$T_j=25^\circ C$		17		
Fall time	t_f					$T_j=125^\circ C$		21		
Turn-on energy loss per pulse	E_{on}					$T_j=25^\circ C$		207		
Turn-off energy loss per pulse	E_{off}					$T_j=125^\circ C$		228		
Input capacitance	C_{ies}									
Output capacitance	C_{oss}	f=1MHz	0	25		$T_j=25^\circ C$		288		
Reverse transfer capacitance	C_{riss}							137		
Gate charge	Q_{Gate}		± 15	480	75	$T_j=25^\circ C$		470		nC
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness $\leq 50\mu m$ $\lambda = 1 W/mK$						0,86		K/W
Buck FWD										
Diode forward voltage	V_F				75	$T_j=25^\circ C$ $T_j=125^\circ C$	1,2	1,46 1,40	2,2	V
Peak reverse recovery current	I_{RRM}	Rgon=8 Ω	± 15	350	75	$T_j=25^\circ C$		70		A
Reverse recovery time	t_{rr}					$T_j=125^\circ C$		81		
Reverse recovered charge	Q_{rr}					$T_j=25^\circ C$		134		
Peak rate of fall of recovery current	$di(rec)max/dt$					$T_j=125^\circ C$		265		
Reverse recovered energy	E_{rec}					$T_j=25^\circ C$		3,22		
						$T_j=125^\circ C$		6,01		
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness $\leq 50\mu m$ $\lambda = 1 W/mK$						1,35		K/W

Characteristic Values

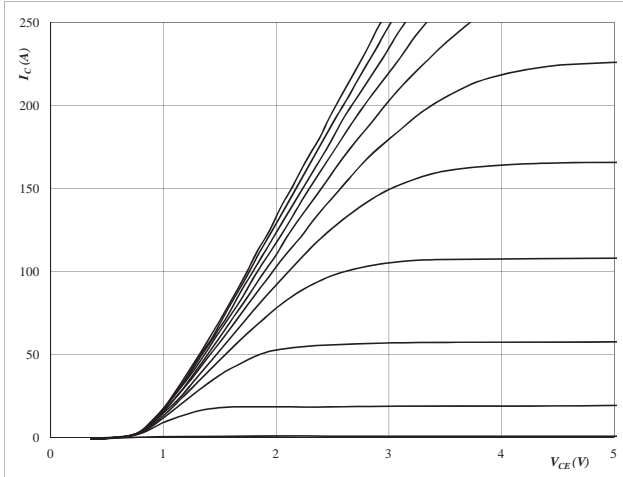
Parameter	Symbol	Conditions					Value			Unit
		$V_{GE}[V]$ or $V_{GS}[V]$	$V_r[V]$ or $V_{CE}[V]$ or $V_{DS}[V]$	$I_c[A]$ or $I_F[A]$ or $I_b[A]$	T_j	Min	Typ	Max		
Boost IGBT										
Gate emitter threshold voltage	$V_{GE(th)}$	$V_{CE}=V_{GE}$			0,0012	$T_j=25^\circ C$ $T_j=125^\circ C$	5	5,8	6,5	V
Collector-emitter saturation voltage	$V_{CE(sat)}$		15		75	$T_j=25^\circ C$ $T_j=125^\circ C$	1	1,58 1,83	2,1	V
Collector-emitter cut-off incl diode	I_{CES}		0	600		$T_j=25^\circ C$ $T_j=125^\circ C$			30	μA
Gate-emitter leakage current	I_{GES}		20	0		$T_j=25^\circ C$ $T_j=125^\circ C$			700	nA
Integrated Gate resistor	R_{gint}							none		Ω
Turn-on delay time	$t_{d(on)}$	$R_{goff}=8 \Omega$ $R_{gon}=8 \Omega$	± 15	350	75	$T_j=25^\circ C$		142		ns
Rise time	t_r					$T_j=125^\circ C$		143		
Turn-off delay time	$t_{d(off)}$					$T_j=25^\circ C$		21		
Fall time	t_f					$T_j=125^\circ C$		24		
Turn-on energy loss per pulse	E_{on}					$T_j=25^\circ C$		206		
Turn-off energy loss per pulse	E_{off}					$T_j=125^\circ C$		227		
						$T_j=25^\circ C$		90		
		$T_j=125^\circ C$		112						
Input capacitance	C_{ies}	f=1MHz	0	25		$T_j=25^\circ C$		4620		pF
Output capacitance	C_{oss}							288		
Reverse transfer capacitance	C_{riss}							137		
Gate charge	Q_{Gate}		± 15	480	75	$T_j=25^\circ C$		470		nC
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness $\leq 50\mu m$ $\lambda = 1 W/mK$						0,86		K/W
Buck and Boost Inverse FWD										
Diode forward voltage	V_F				75	$T_j=25^\circ C$ $T_j=125^\circ C$	1,2	1,46 1,40	2,2	V
Thermal resistance chip to heatsink per chip	R_{thJH}	Thermal grease thickness $\leq 50\mu m$ $\lambda = 1 W/mK$						1,35		K/W
Thermistor										
Rated resistance	R					$T=25^\circ C$		22000		Ω
Deviation of R100	$\Delta R/R$	R100=1486 Ω				$T=100^\circ C$	-5		5	%
Power dissipation	P					$T=25^\circ C$		210		mW
Power dissipation constant						$T=25^\circ C$		3,5		mW/K
B-value	$B_{(25/50)}$	Tol. $\pm 3\%$				$T=25^\circ C$				K
B-value	$B_{(25/100)}$	Tol. $\pm 3\%$				$T=25^\circ C$		4000		K
Vincotech NTC Reference						$T=25^\circ C$			A	

Buck

Figure 1 IGBT

Typical output characteristics

$I_C = f(V_{CE})$

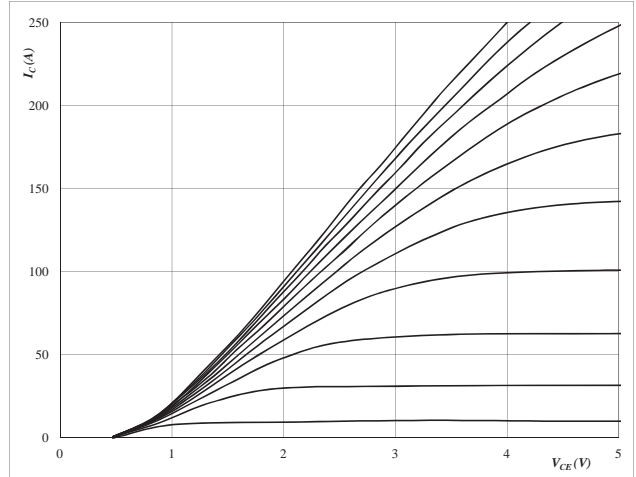


At
 $t_p = 350 \mu s$
 $T_j = 25 \text{ }^\circ C$
 V_{GE} from 7 V to 17 V in steps of 1 V

Figure 2 IGBT

Typical output characteristics

$I_C = f(V_{CE})$

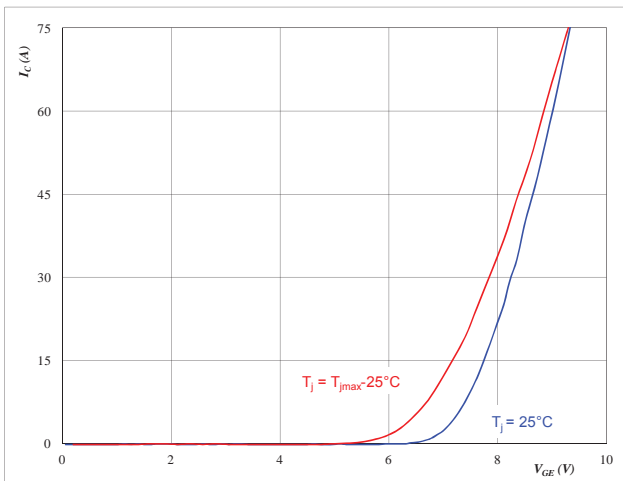


At
 $t_p = 350 \mu s$
 $T_j = 125 \text{ }^\circ C$
 V_{GE} from 7 V to 17 V in steps of 1 V

Figure 3 IGBT

Typical transfer characteristics

$I_C = f(V_{GE})$

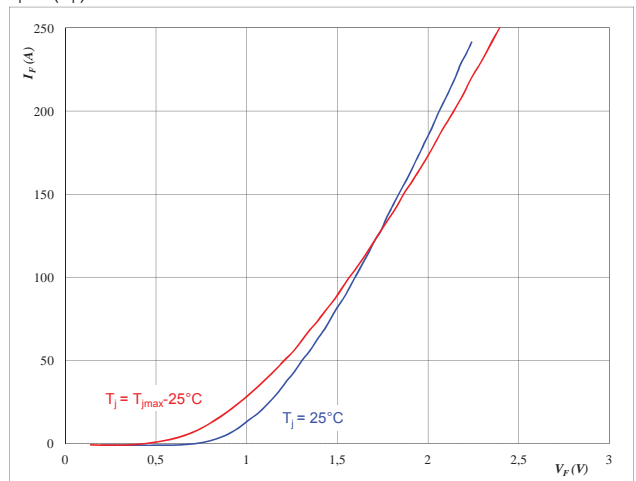


At
 $t_p = 350 \mu s$
 $V_{CE} = 10 V$

Figure 4 FWD

Typical diode forward current as a function of forward voltage

$I_F = f(V_F)$



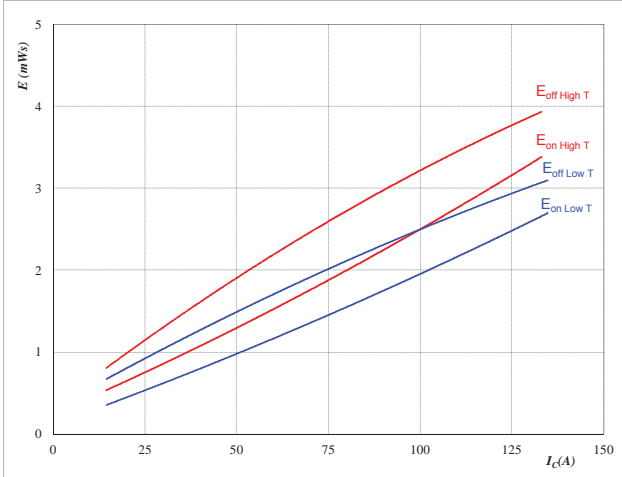
At
 $t_p = 350 \mu s$

Buck

Figure 5 IGBT

Typical switching energy losses
as a function of collector current

$$E = f(I_C)$$



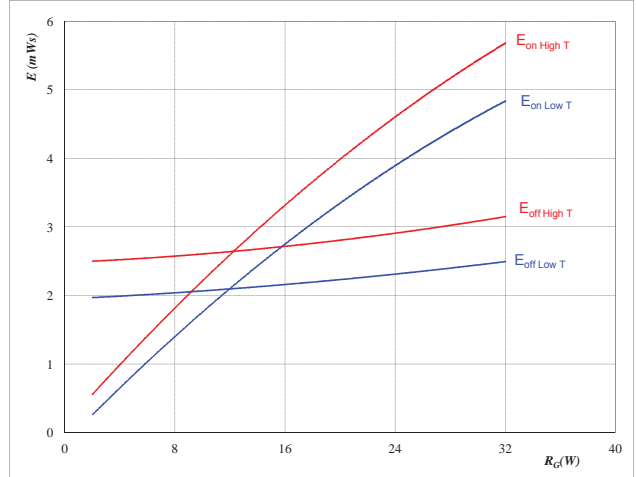
With an inductive load at

$T_J =$	25/125	°C
$V_{CE} =$	350	V
$V_{GE} =$	±15	V
$R_{gon} =$	8	Ω
$R_{goff} =$	8	Ω

Figure 6 IGBT

Typical switching energy losses
as a function of gate resistor

$$E = f(R_G)$$



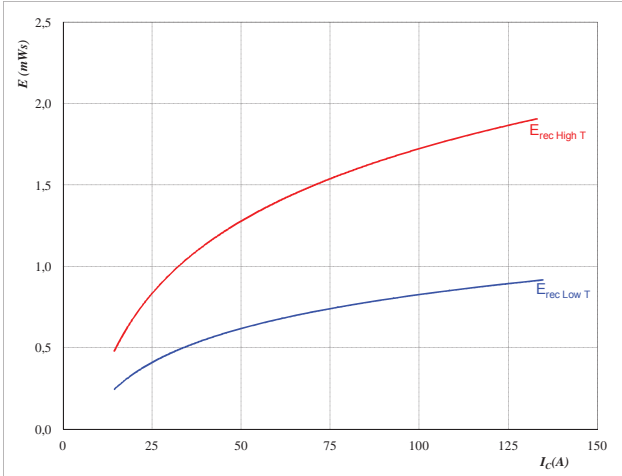
With an inductive load at

$T_J =$	25/125	°C
$V_{CE} =$	350	V
$V_{GE} =$	±15	V
$I_C =$	75	A

Figure 7 FWD

Typical reverse recovery energy loss
as a function of collector current

$$E_{rec} = f(I_C)$$



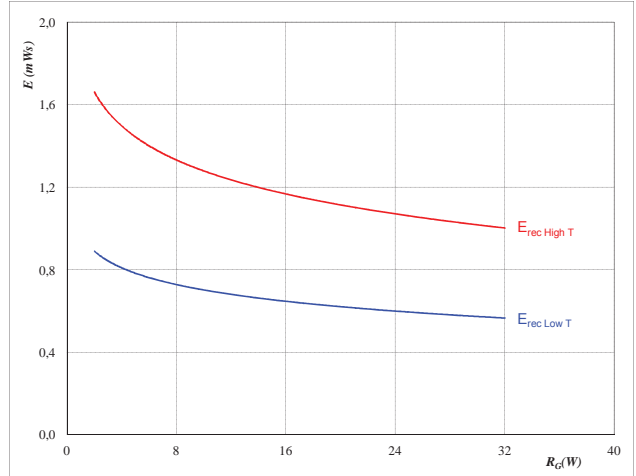
With an inductive load at

$T_J =$	25/125	°C
$V_{CE} =$	350	V
$V_{GE} =$	±15	V
$R_{gon} =$	8	Ω

Figure 8 FWD

Typical reverse recovery energy loss
as a function of gate resistor

$$E_{rec} = f(R_G)$$



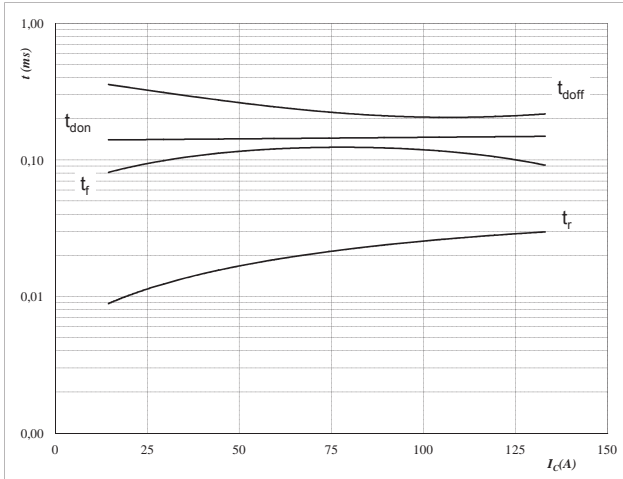
With an inductive load at

$T_J =$	25/125	°C
$V_{CE} =$	350	V
$V_{GE} =$	±15	V
$I_C =$	75	A

Buck

Figure 9 IGBT

Typical switching times as a function of collector current
 $t = f(I_C)$

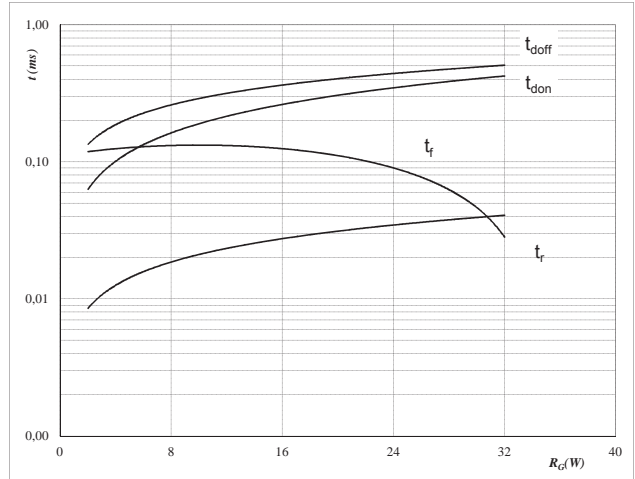


With an inductive load at

$T_J = 125 \text{ } ^\circ\text{C}$
 $V_{CE} = 350 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $R_{gon} = 8 \text{ } \Omega$
 $R_{goff} = 8 \text{ } \Omega$

Figure 10 IGBT

Typical switching times as a function of gate resistor
 $t = f(R_G)$

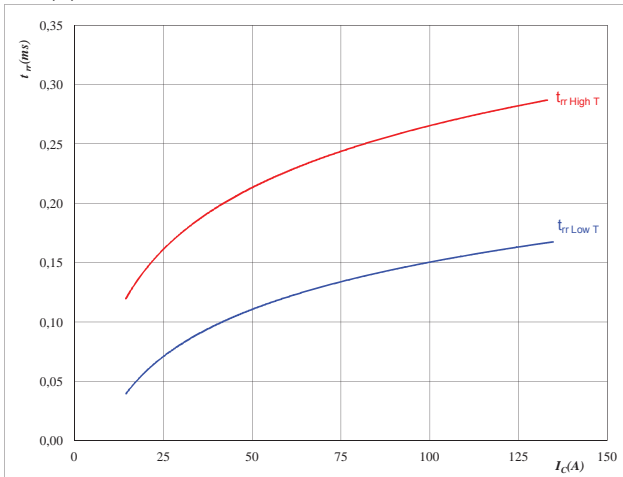


With an inductive load at

$T_J = 125 \text{ } ^\circ\text{C}$
 $V_{CE} = 350 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $I_C = 75 \text{ A}$

Figure 11 FWD

Typical reverse recovery time as a function of collector current
 $t_{rr} = f(I_C)$

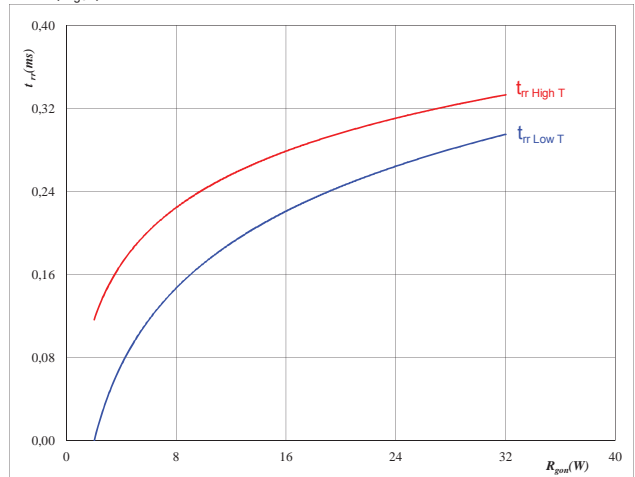


At

$T_J = 25/125 \text{ } ^\circ\text{C}$
 $V_{CE} = 350 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $R_{gon} = 8 \text{ } \Omega$

Figure 12 FWD

Typical reverse recovery time as a function of IGBT turn on gate resistor
 $t_{rr} = f(R_{gon})$



At

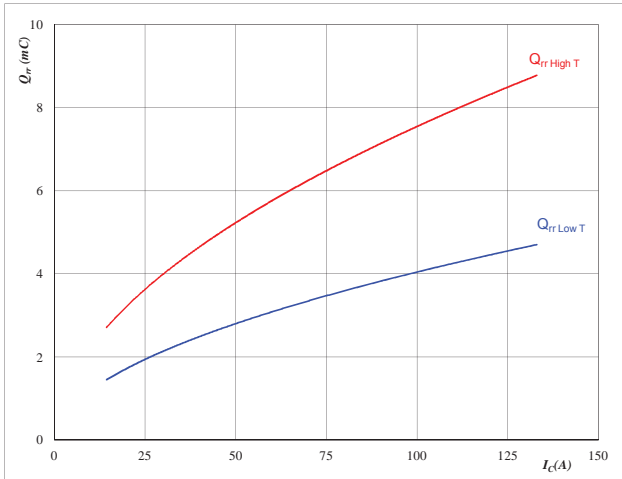
$T_J = 25/125 \text{ } ^\circ\text{C}$
 $V_R = 350 \text{ V}$
 $I_F = 75 \text{ A}$
 $V_{GE} = \pm 15 \text{ V}$

Buck

Figure 13 FWD

Typical reverse recovery charge as a function of collector current

$$Q_{rr} = f(I_c)$$



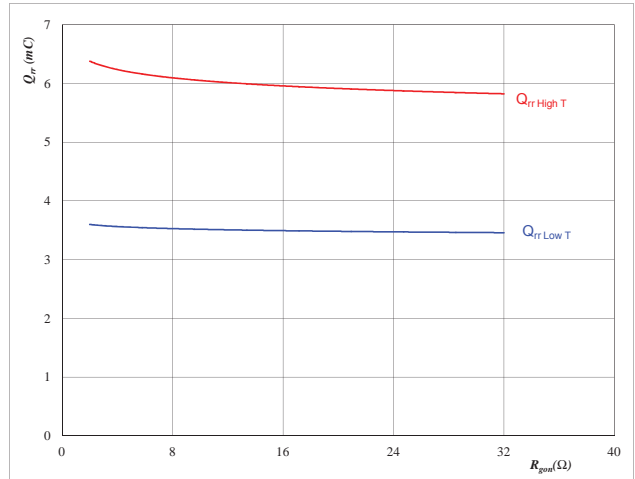
At

$T_j =$	25/125	°C
$V_{CE} =$	350	V
$V_{GE} =$	±15	V
$R_{gon} =$	8	Ω

Figure 14 FWD

Typical reverse recovery charge as a function of IGBT turn on gate resistor

$$Q_{rr} = f(R_{gon})$$



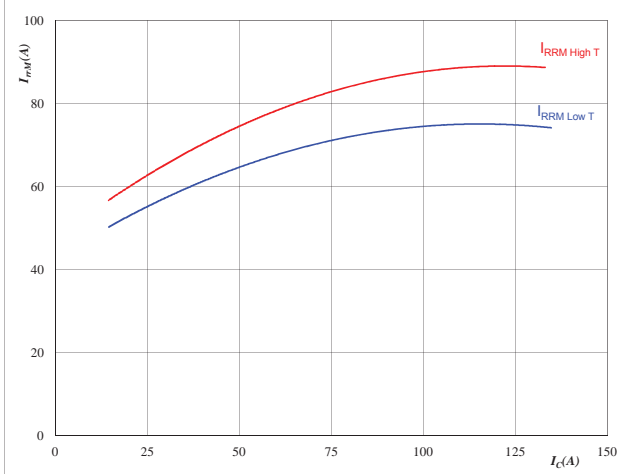
At

$T_j =$	25/125	°C
$V_R =$	350	V
$I_F =$	75	A
$V_{GE} =$	±15	V

Figure 15 FWD

Typical reverse recovery current as a function of collector current

$$I_{RRM} = f(I_c)$$



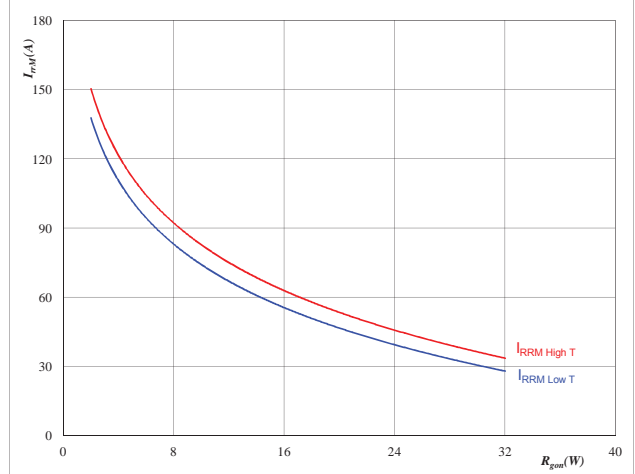
At

$T_j =$	25/125	°C
$V_{CE} =$	350	V
$V_{GE} =$	±15	V
$R_{gon} =$	8	Ω

Figure 16 FWD

Typical reverse recovery current as a function of IGBT turn on gate resistor

$$I_{RRM} = f(R_{gon})$$



At

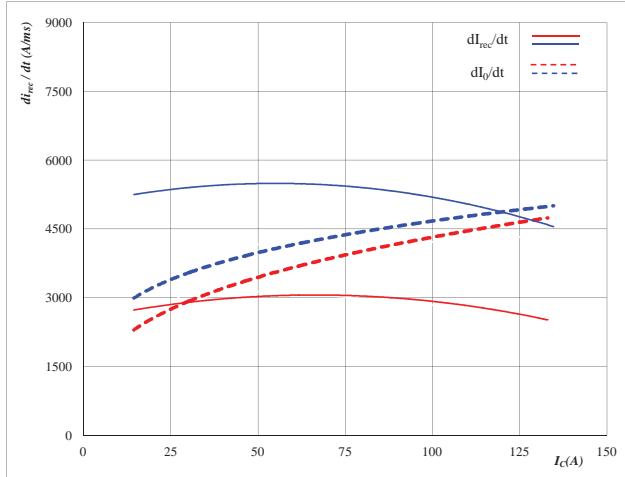
$T_j =$	25/125	°C
$V_R =$	350	V
$I_F =$	75	A
$V_{GE} =$	±15	V

Buck

Figure 17 FWD

Typical rate of fall of forward and reverse recovery current as a function of collector current

$$dI_o/dt, dI_{rec}/dt = f(I_c)$$



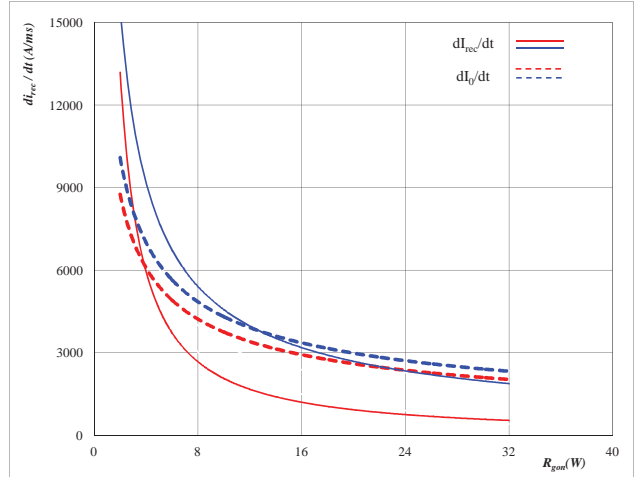
At

$T_j =$	25/125	°C
$V_{CE} =$	350	V
$V_{GE} =$	±15	V
$R_{gon} =$	8	Ω

Figure 18 FWD

Typical rate of fall of forward and reverse recovery current as a function of IGBT turn on gate resistor

$$dI_o/dt, dI_{rec}/dt = f(R_{gon})$$



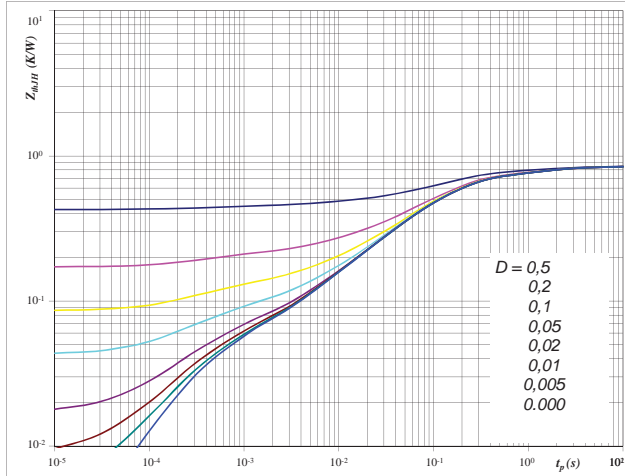
At

$T_j =$	25/125	°C
$V_R =$	350	V
$I_F =$	75	A
$V_{GE} =$	±15	V

Figure 19 IGBT

IGBT transient thermal impedance as a function of pulse width

$$Z_{thJH} = f(t_p)$$



At

$D =$	t_p / T	
$R_{thJH} =$	0,86	K/W

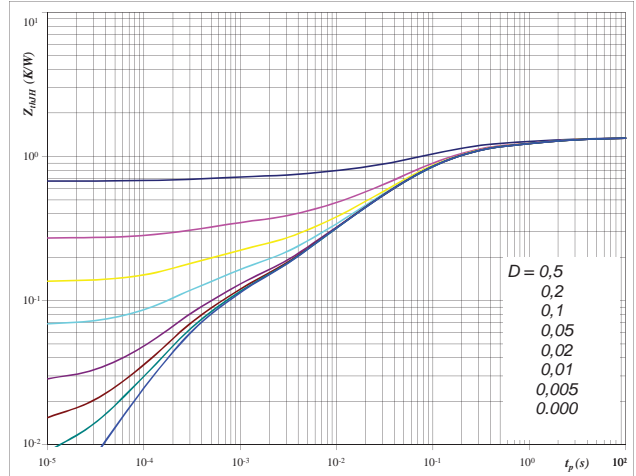
IGBT thermal model values

R (C/W)	Tau (s)
0,03	8,8E+00
0,14	1,3E+00
0,43	1,4E-01
0,17	3,3E-02
0,05	4,4E-03
0,04	3,3E-04

Figure 20 FWD

FWD transient thermal impedance as a function of pulse width

$$Z_{thJH} = f(t_p)$$



At

$D =$	t_p / T	
$R_{thJH} =$	1,35	K/W

FWD thermal model values

R (C/W)	Tau (s)
0,04	9,0E+00
0,20	1,2E+00
0,54	1,4E-01
0,39	3,3E-02
0,11	4,8E-03
0,08	3,4E-04

Buck

Figure 21 IGBT

Power dissipation as a function of heatsink temperature

$$P_{tot} = f(T_h)$$

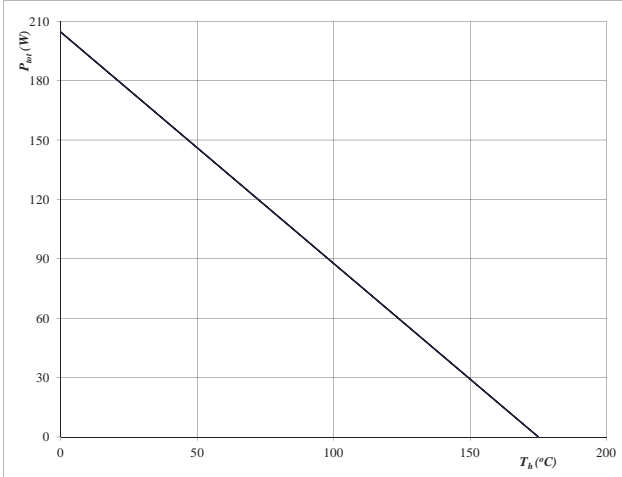

At
 T_j = 175 °C

Figure 22 IGBT

Collector current as a function of heatsink temperature

$$I_C = f(T_h)$$

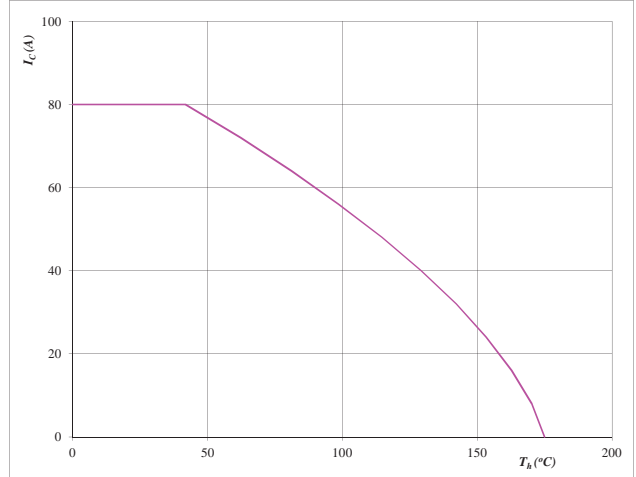

At
 T_j = 175 °C
 V_{GE} = 15 V

Figure 23 FWD

Power dissipation as a function of heatsink temperature

$$P_{tot} = f(T_h)$$

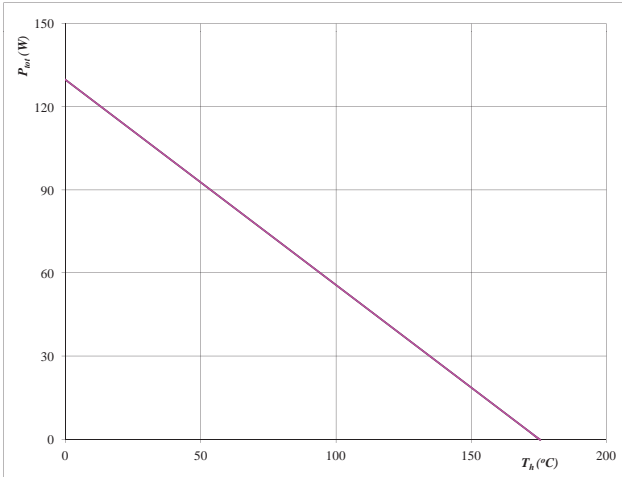
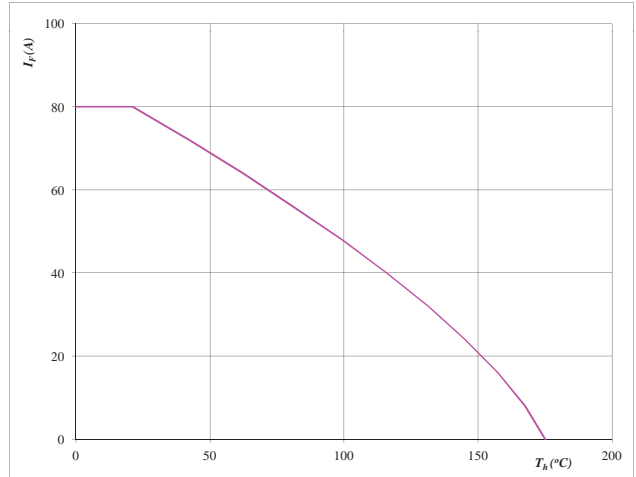

At
 T_j = 175 °C

Figure 24 FWD

Forward current as a function of heatsink temperature

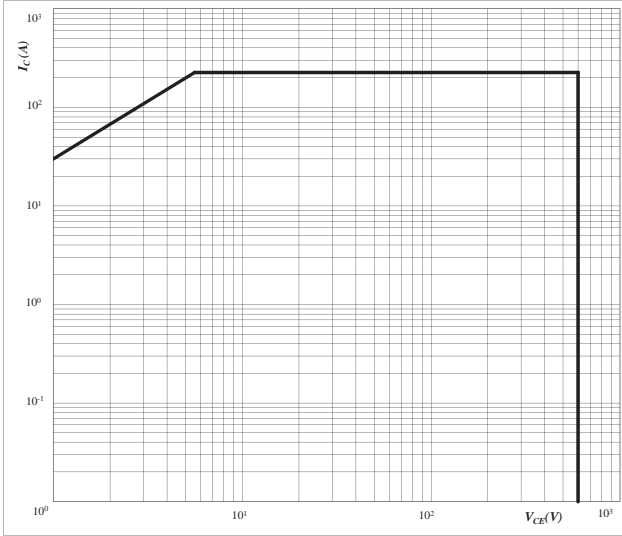
$$I_F = f(T_h)$$


At
 T_j = 175 °C

Buck & Boost

Figure 25 IGBT

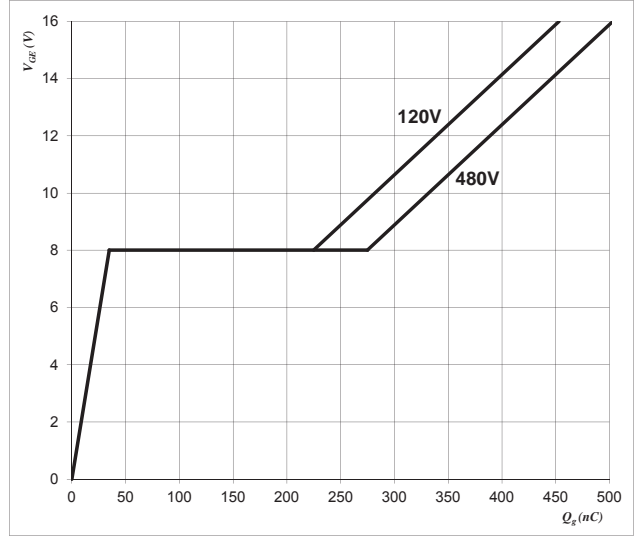
Turn on safe operating area as a function of collector-emitter voltage
 $I_C = f(V_{CE})$



At
 $T_J = T_{jmax} \text{ } ^\circ\text{C}$

Figure 26 IGBT

Gate voltage vs Gate charge
 $V_{GE} = f(Q_g)$



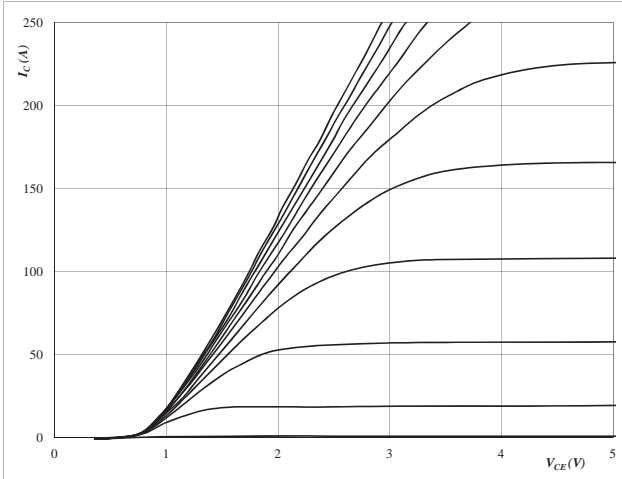
At
 $I_C = 75 \text{ A}$

Boost

Figure 1 IGBT

Typical output characteristics

$I_C = f(V_{CE})$

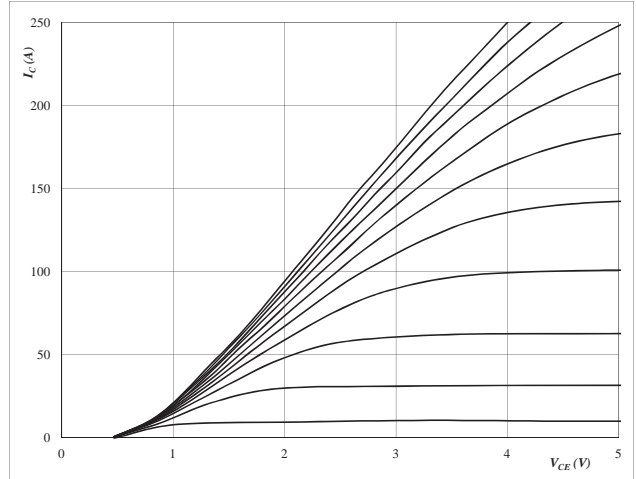


At
 $t_p = 250 \mu s$
 $T_j = 25 \text{ }^\circ C$
 V_{GE} from 7 V to 17 V in steps of 1 V

Figure 2 IGBT

Typical output characteristics

$I_C = f(V_{CE})$

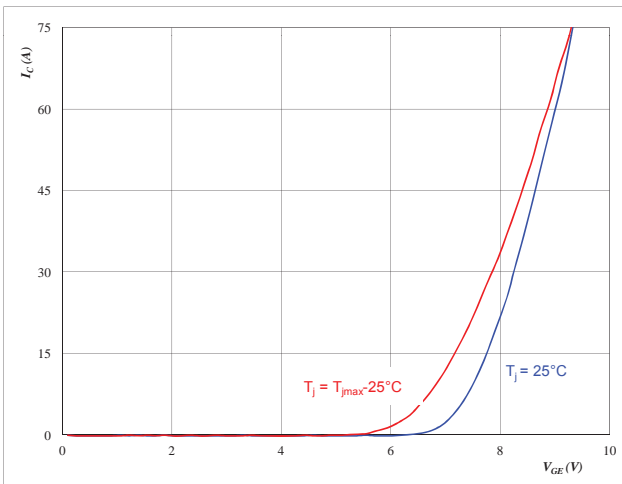


At
 $t_p = 250 \mu s$
 $T_j = 125 \text{ }^\circ C$
 V_{GE} from 7 V to 17 V in steps of 1 V

Figure 3 IGBT

Typical transfer characteristics

$I_C = f(V_{GE})$

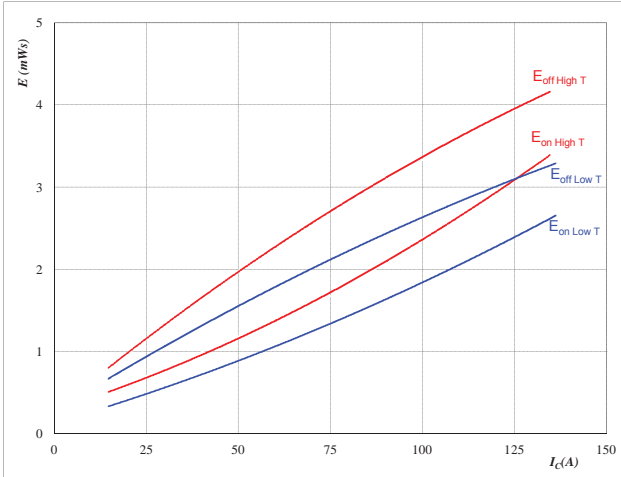


At
 $t_p = 250 \mu s$
 $V_{CE} = 10 V$

Boost

Figure 4 IGBT

Typical switching energy losses
 as a function of collector current
 $E = f(I_C)$

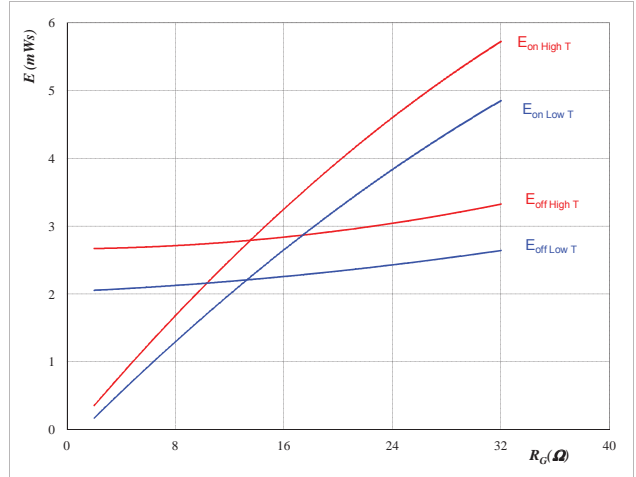


With an inductive load at

$T_j = 25/125 \text{ } ^\circ\text{C}$
 $V_{CE} = 350 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $R_{gon} = 8 \text{ } \Omega$
 $R_{goff} = 8 \text{ } \Omega$

Figure 5 IGBT

Typical switching energy losses
 as a function of gate resistor
 $E = f(R_G)$

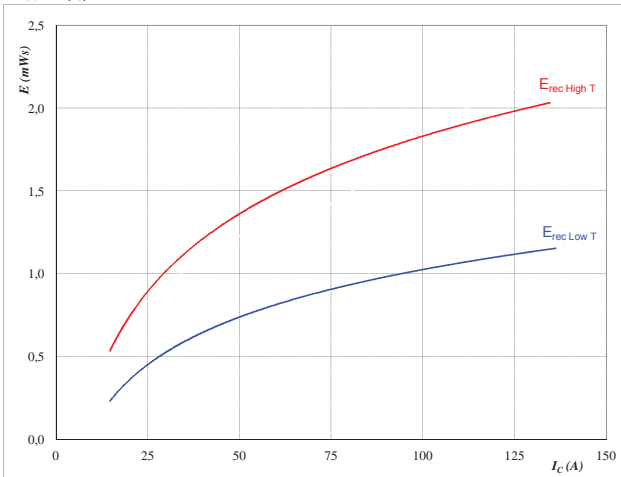


With an inductive load at

$T_j = 25/125 \text{ } ^\circ\text{C}$
 $V_{CE} = 350 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $I_C = 75 \text{ A}$

Figure 6 IGBT

Typical reverse recovery energy loss
 as a function of collector current
 $E_{rec} = f(I_C)$

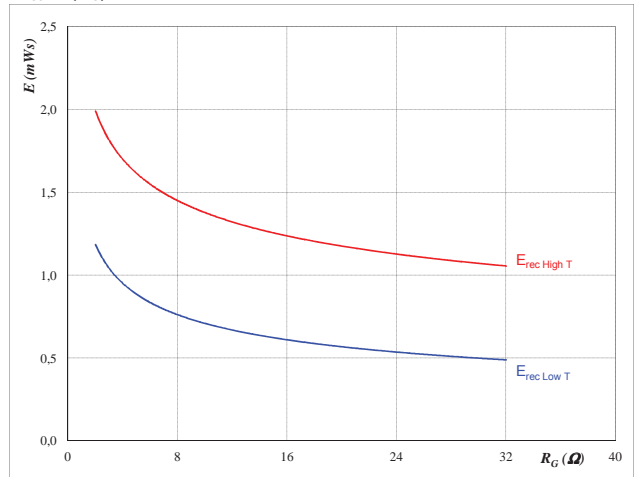


With an inductive load at

$T_j = 25/125 \text{ } ^\circ\text{C}$
 $V_{CE} = 350 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $R_{gon} = 8 \text{ } \Omega$

Figure 7 IGBT

Typical reverse recovery energy loss
 as a function of gate resistor
 $E_{rec} = f(R_G)$



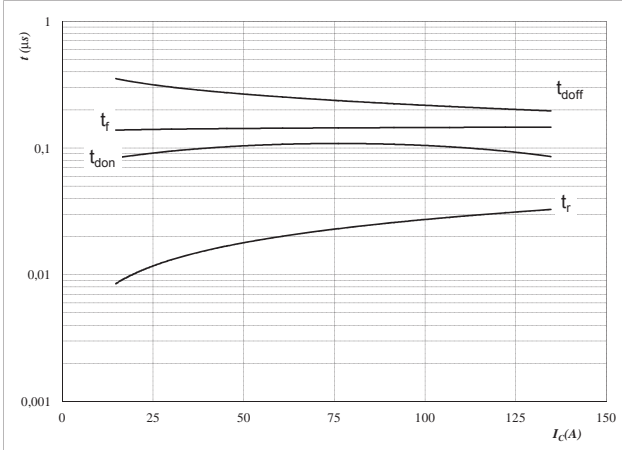
With an inductive load at

$T_j = 25/125 \text{ } ^\circ\text{C}$
 $V_{CE} = 350 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $I_C = 75 \text{ A}$

Boost

Figure 8 IGBT

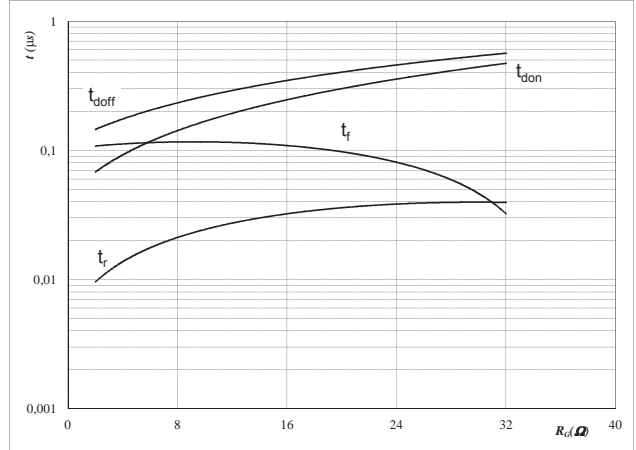
Typical switching times as a function of collector current
 $t = f(I_c)$



With an inductive load at
 $T_j = 125 \text{ } ^\circ\text{C}$
 $V_{CE} = 350 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $R_{gon} = 8 \text{ } \Omega$
 $R_{goff} = 8 \text{ } \Omega$

Figure 9 IGBT

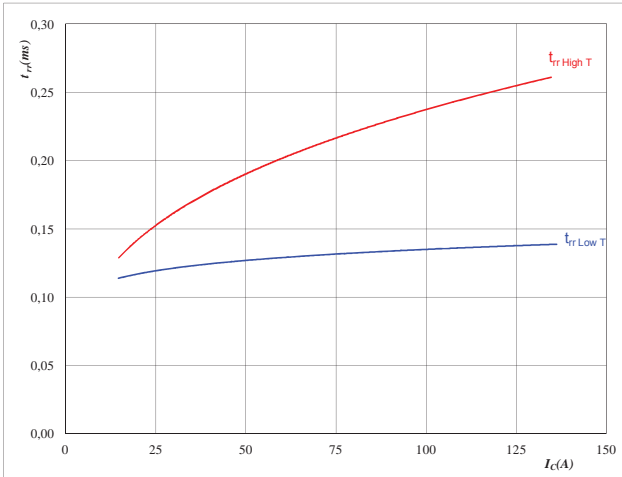
Typical switching times as a function of gate resistor
 $t = f(R_G)$



With an inductive load at
 $T_j = 125 \text{ } ^\circ\text{C}$
 $V_{CE} = 350 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $I_C = 75 \text{ A}$

Figure 10 FWD

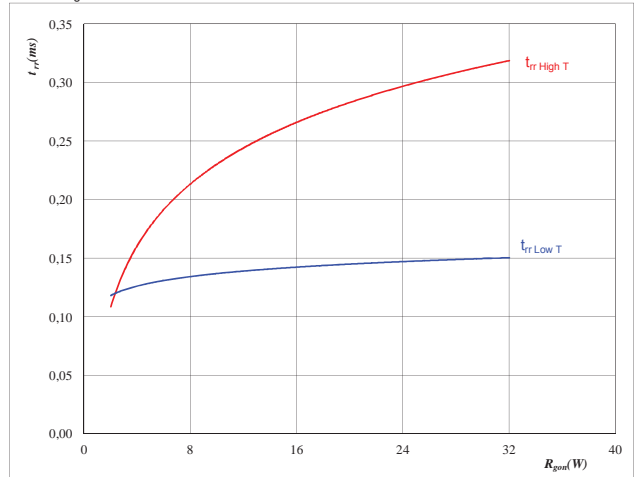
Typical reverse recovery time as a function of collector current
 $t_{rr} = f(I_c)$



At
 $T_j = 25/125 \text{ } ^\circ\text{C}$
 $V_{CE} = 350 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $R_{gon} = 8 \text{ } \Omega$

Figure 11 FWD

Typical reverse recovery time as a function of IGBT turn on gate resistor
 $t_{rr} = f(R_{gon})$

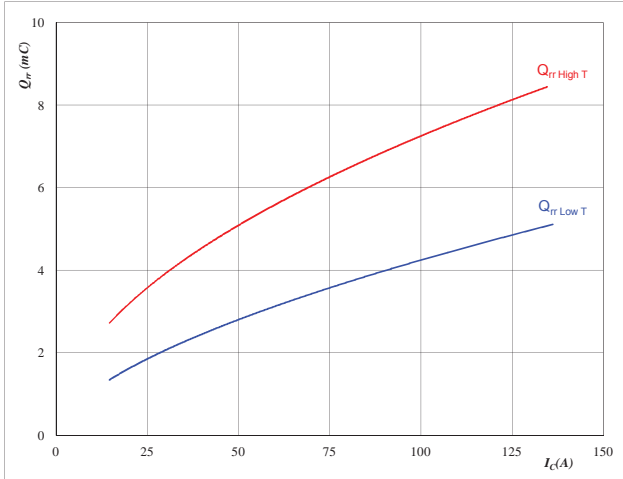


At
 $T_j = 25/125 \text{ } ^\circ\text{C}$
 $V_R = 350 \text{ V}$
 $I_F = 75 \text{ A}$
 $V_{GE} = \pm 15 \text{ V}$

Boost

Figure 12 FWD
Typical reverse recovery charge as a function of collector current

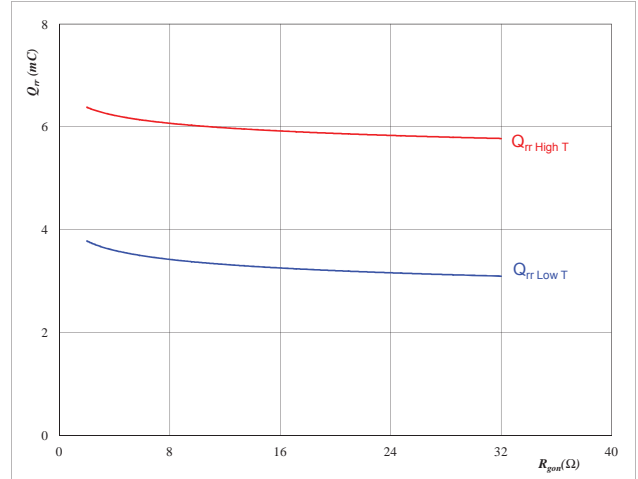
$$Q_{rr} = f(I_c)$$


At

$T_j =$	25/125	°C
$V_{CE} =$	350	V
$V_{GE} =$	±15	V
$R_{gon} =$	8	Ω

Figure 13 FWD
Typical reverse recovery charge as a function of IGBT turn on gate resistor

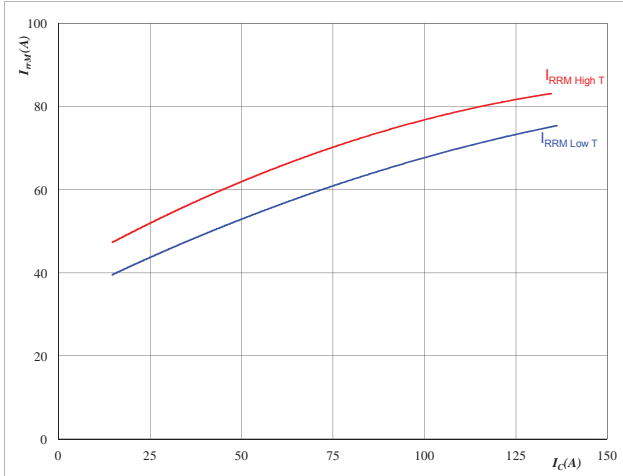
$$Q_{rr} = f(R_{gon})$$


At

$T_j =$	25/125	°C
$V_R =$	350	V
$I_F =$	75	A
$V_{GE} =$	±15	V

Figure 14 FWD
Typical reverse recovery current as a function of collector current

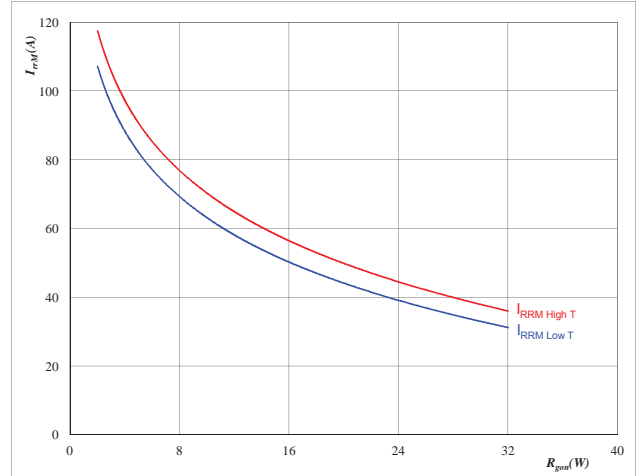
$$I_{RRM} = f(I_c)$$


At

$T_j =$	25/125	°C
$V_{CE} =$	350	V
$V_{GE} =$	±15	V
$R_{gon} =$	8	Ω

Figure 15 FWD
Typical reverse recovery current as a function of IGBT turn on gate resistor

$$I_{RRM} = f(R_{gon})$$


At

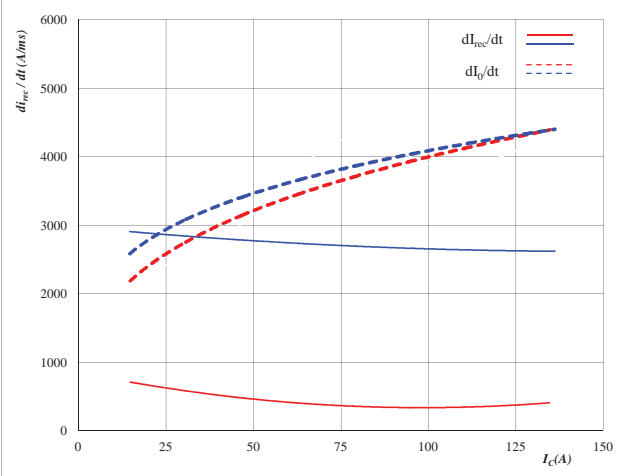
$T_j =$	25/125	°C
$V_R =$	350	V
$I_F =$	75	A
$V_{GE} =$	±15	V

Boost

Figure 16 FWD

Typical rate of fall of forward and reverse recovery current as a function of collector current

$$dI_o/dt, dI_{rec}/dt = f(I_c)$$

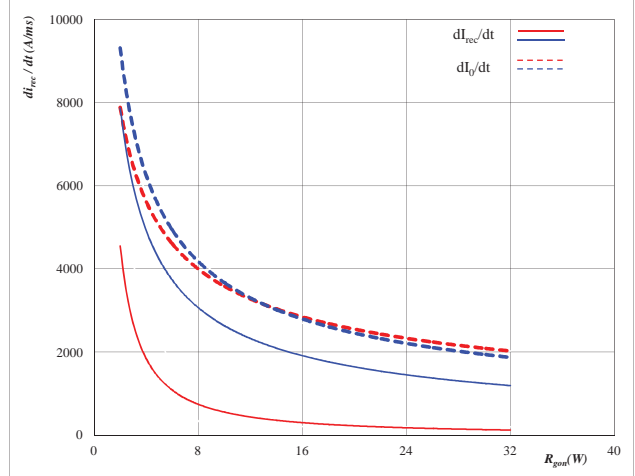


At
 $T_j = 25/125 \text{ } ^\circ\text{C}$
 $V_{CE} = 350 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $R_{gon} = 8 \text{ } \Omega$

Figure 17 FWD

Typical rate of fall of forward and reverse recovery current as a function of IGBT turn on gate resistor

$$dI_o/dt, dI_{rec}/dt = f(R_{gon})$$

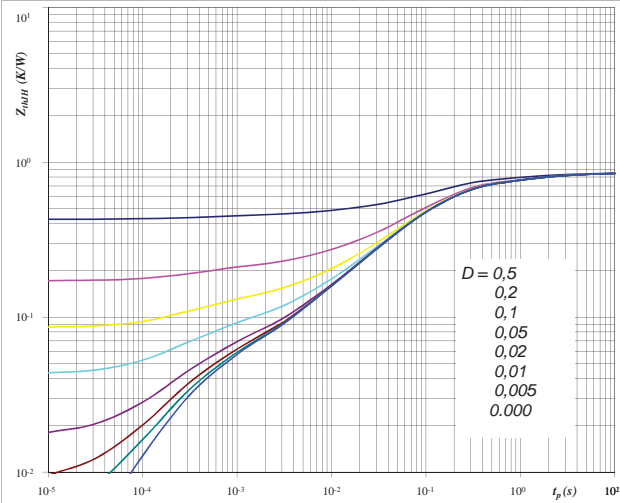


At
 $T_j = 25/125 \text{ } ^\circ\text{C}$
 $V_R = 350 \text{ V}$
 $I_F = 75 \text{ A}$
 $V_{GE} = \pm 15 \text{ V}$

Figure 18 IGBT

IGBT transient thermal impedance as a function of pulse width

$$Z_{thJH} = f(t_p)$$



At
 $D = t_p / T$
 $R_{thJH} = 0,86 \text{ K/W}$

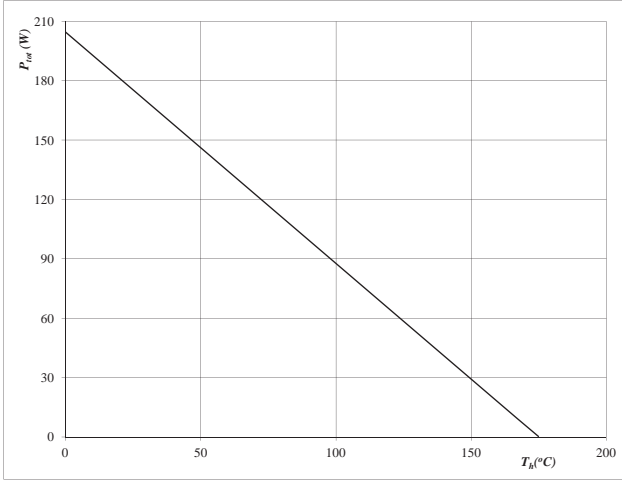
R (C/W)	Tau (s)
0,03	8,8E+00
0,14	1,3E+00
0,43	1,4E-01
0,17	3,3E-02
0,05	4,4E-03
0,04	3,3E-04

Boost

Figure 19 IGBT

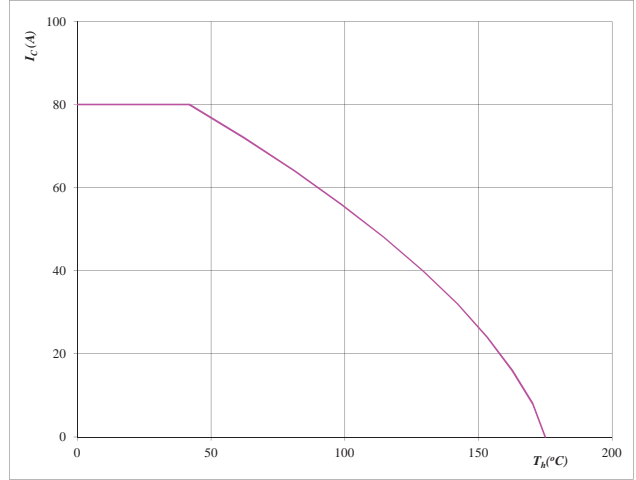
Power dissipation as a function of heatsink temperature

$$P_{tot} = f(T_h)$$


At
 $T_j = 175 \text{ °C}$
Figure 20 IGBT

Collector current as a function of heatsink temperature

$$I_C = f(T_h)$$

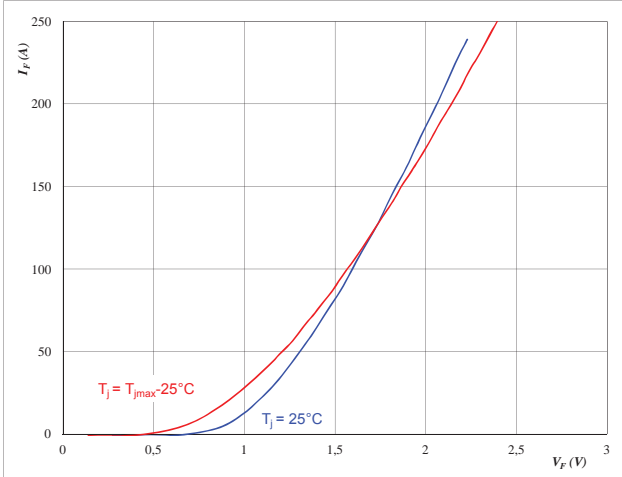

At
 $T_j = 175 \text{ °C}$
 $V_{GE} = 15 \text{ V}$

Buck and Boost Inverse Diode

Figure 1 Buck and Boost Inverse Diode

Typical diode forward current as a function of forward voltage

$$I_F = f(V_F)$$

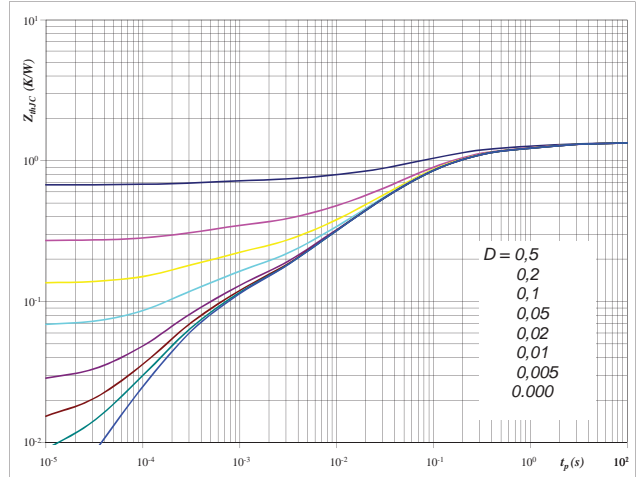


At
 $t_p = 350 \mu s$

Figure 2 Buck and Boost Inverse Diode

Diode transient thermal impedance as a function of pulse width

$$Z_{thJC} = f(t_p)$$

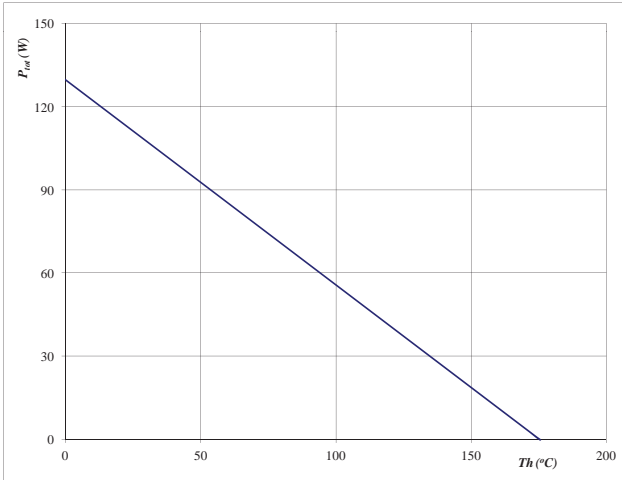


At
D = t_p / T
 $R_{thJH} = 1,35 \text{ K/W}$

Figure 3 Buck and Boost Inverse Diode

Power dissipation as a function of heatsink temperature

$$P_{tot} = f(T_h)$$

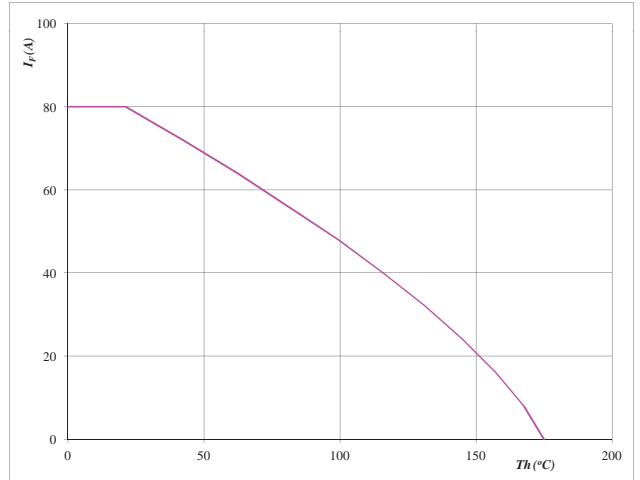


At
 $T_j = 175 \text{ }^\circ\text{C}$

Figure 4 Buck and Boost Inverse Diode

Forward current as a function of heatsink temperature

$$I_F = f(T_h)$$



At
 $T_j = 175 \text{ }^\circ\text{C}$

Thermistor

Figure 1 Thermistor

Typical NTC characteristic
as a function of temperature

$R_T = f(T)$

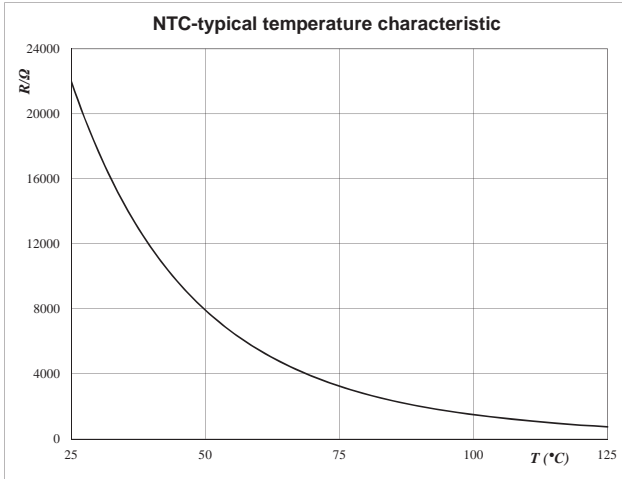


Figure 2 Thermistor

Typical NTC resistance values

$$R(T) = R_{25} \cdot e^{\left(B_{25/100} \left(\frac{1}{T} - \frac{1}{T_{25}} \right) \right)} \quad [\Omega]$$

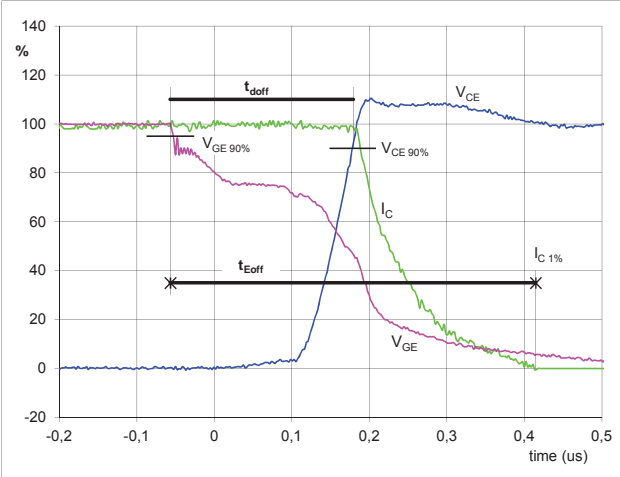
T [°C]	R _{nom} [Ω]	R _{min} [Ω]	R _{max} [Ω]	ΔR/R [±%]
-55	2089434,5	1506495,4	2672373,6	27,9
0	71804,2	59724,4	83884	16,8
10	43780,4	37094,4	50466,5	15,3
20	27484,6	23684,6	31284,7	13,8
25	22000	19109,3	24890,7	13,1
30	17723,3	15512,2	19934,4	12,5
60	5467,9	4980,6	5955,1	8,9
70	3848,6	3546	4151,1	7,9
80	2757,7	2568,2	2947,1	6,9
90	2008,9	1889,7	2128,2	5,9
100	1486,1	1411,8	1560,4	5
150	400,2	364,8	435,7	8,8

Switching Definitions BUCK IGBT

General conditions	
T_j	= 125 °C
R_{gon}	= 8 Ω
R_{goff}	= 8 Ω

Figure 1 Output inverter IGBT

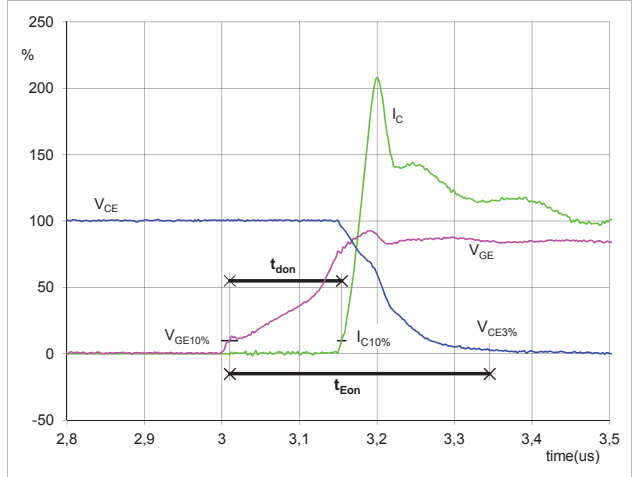
Turn-off Switching Waveforms & definition of t_{doff} , t_{Eoff}
(t_{Eoff} = integrating time for E_{off})



$V_{GE}(0\%) =$	-15	V
$V_{GE}(100\%) =$	15	V
$V_C(100\%) =$	700	V
$I_C(100\%) =$	75	A
$t_{doff} =$	0,23	μs
$t_{Eoff} =$	0,47	μs

Figure 2 Output inverter IGBT

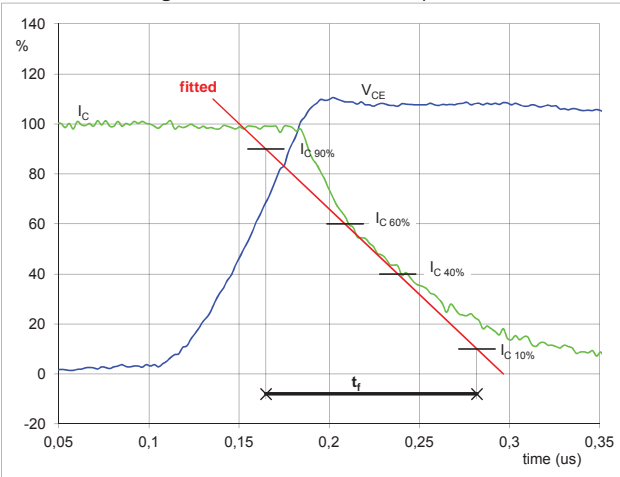
Turn-on Switching Waveforms & definition of t_{don} , t_{Eon}
(t_{Eon} = integrating time for E_{on})



$V_{GE}(0\%) =$	-15	V
$V_{GE}(100\%) =$	15	V
$V_C(100\%) =$	700	V
$I_C(100\%) =$	75	A
$t_{don} =$	0,15	μs
$t_{Eon} =$	0,34	μs

Figure 3 Output inverter IGBT

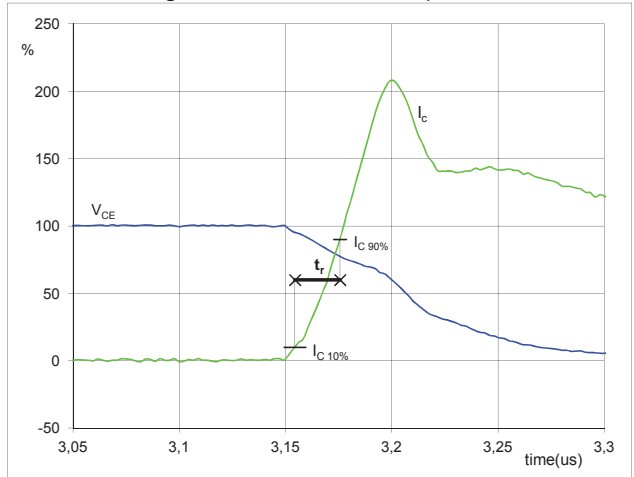
Turn-off Switching Waveforms & definition of t_f



$V_C(100\%) =$	700	V
$I_C(100\%) =$	75	A
$t_f =$	0,12	μs

Figure 4 Output inverter IGBT

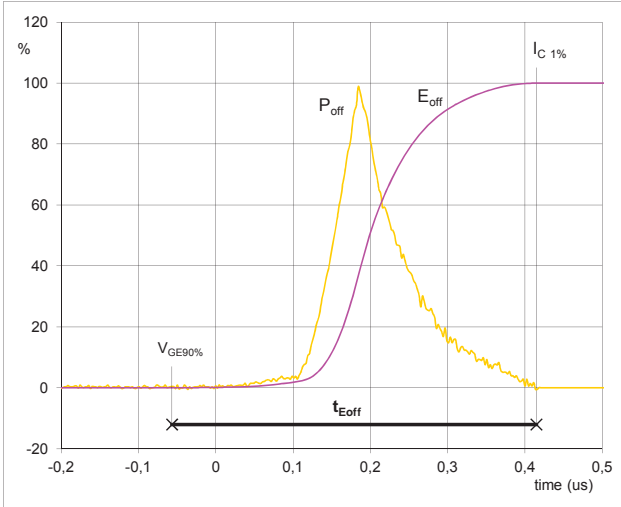
Turn-on Switching Waveforms & definition of t_r



$V_C(100\%) =$	700	V
$I_C(100\%) =$	75	A
$t_r =$	0,02	μs

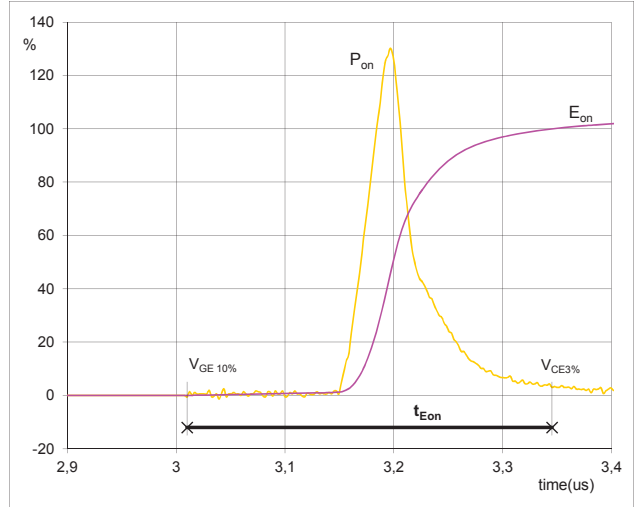
Switching Definitions BUCK IGBT

Figure 5 Output inverter IGBT

Turn-off Switching Waveforms & definition of t_{Eoff}


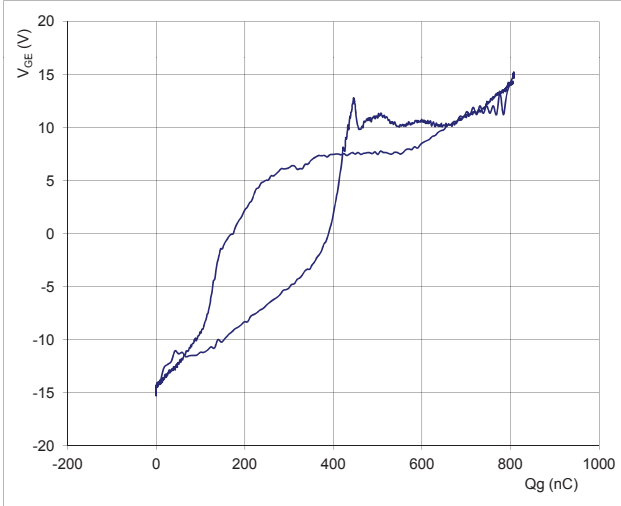
$P_{off} (100\%) =$	52,15	kW
$E_{off} (100\%) =$	2,58	mJ
$t_{Eoff} =$	0,47	μ s

Figure 6 Output inverter IGBT

Turn-on Switching Waveforms & definition of t_{Eon}


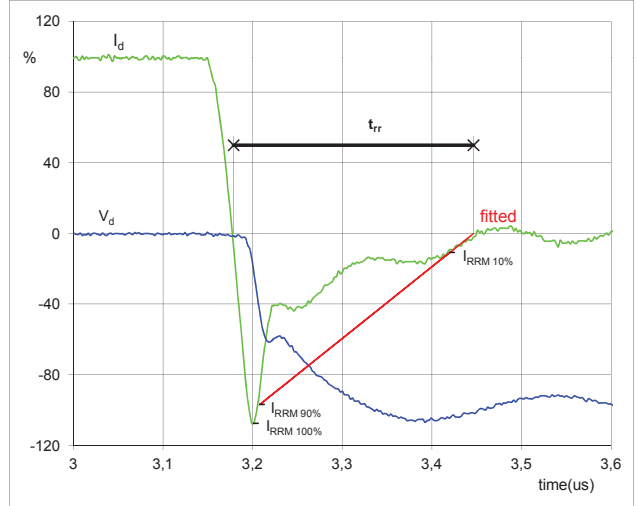
$P_{on} (100\%) =$	52,15	kW
$E_{on} (100\%) =$	1,88	mJ
$t_{Eon} =$	0,34	μ s

Figure 7 Output inverter FWD

Gate voltage vs Gate charge (measured)


$V_{GEoff} =$	-15	V
$V_{GEon} =$	15	V
$V_C (100\%) =$	700	V
$I_C (100\%) =$	75	A
$Q_g =$	808,15	nC

Figure 8 Output inverter IGBT

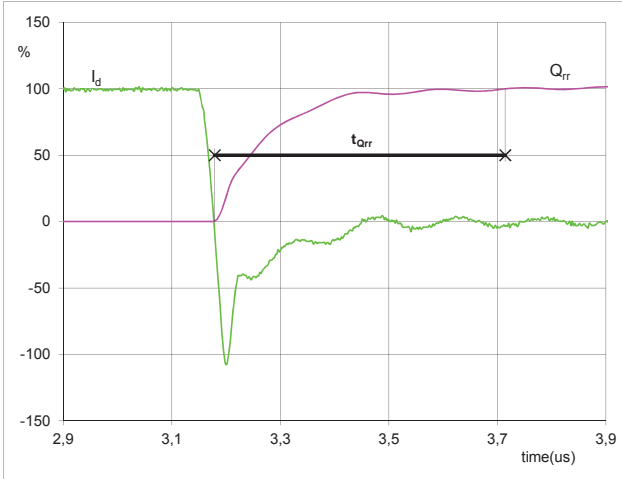
Turn-off Switching Waveforms & definition of t_{rr}


$V_d (100\%) =$	700	V
$I_d (100\%) =$	75	A
$I_{RRM} (100\%) =$	-81	A
$t_{rr} =$	0,27	μ s

Switching Definitions BUCK IGBT

Figure 9 Output inverter FWD

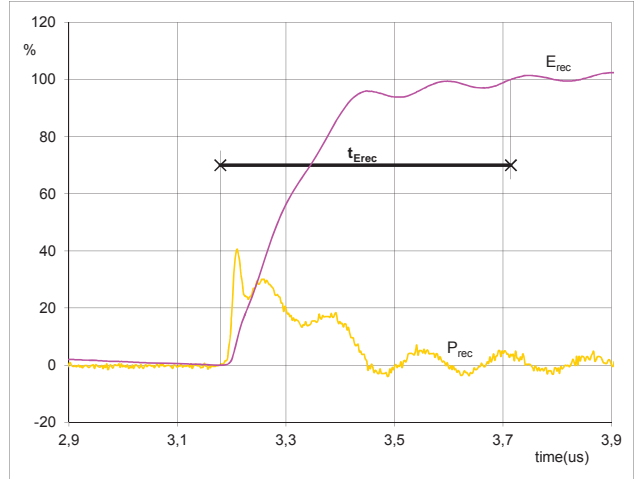
Turn-on Switching Waveforms & definition of t_{Qrr}
(t_{Qrr} = integrating time for Q_{rr})



I_d (100%) = 75 A
 Q_{rr} (100%) = 6,01 μ C
 t_{Qrr} = 0,54 μ s

Figure 10 Output inverter FWD

Turn-on Switching Waveforms & definition of t_{Erec}
(t_{Erec} = integrating time for E_{rec})



P_{rec} (100%) = 52,15 kW
 E_{rec} (100%) = 1,33 mJ
 t_{Erec} = 0,54 μ s

Measurement circuits

Figure 11

BUCK stage switching measurement circuit

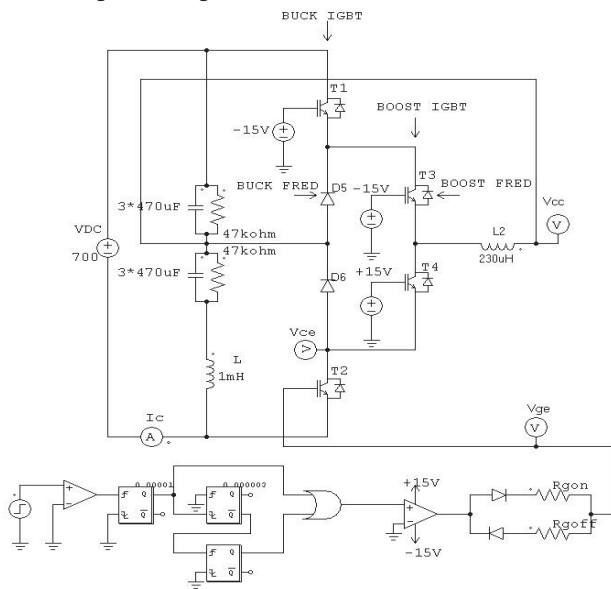
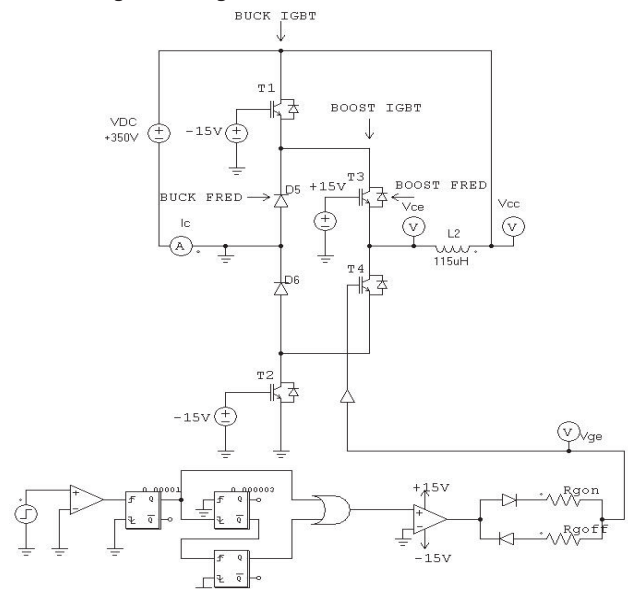


Figure 12

BOOST stage switching measurement circuit



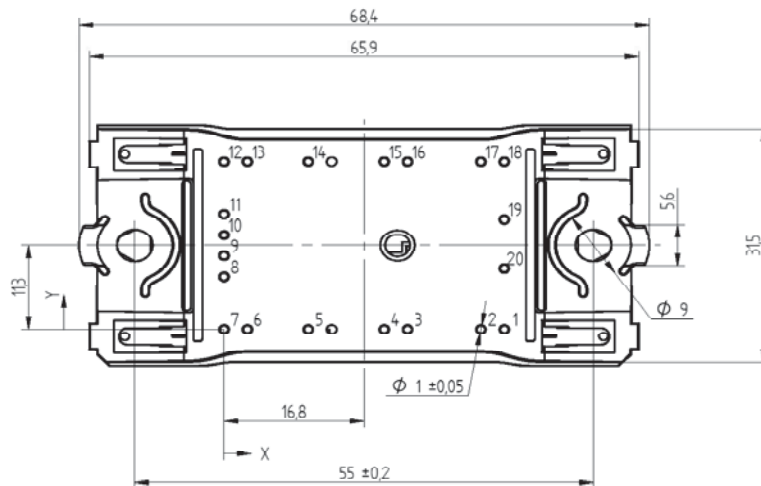
Ordering Code and Marking - Outline - Pinout

Ordering Code & Marking

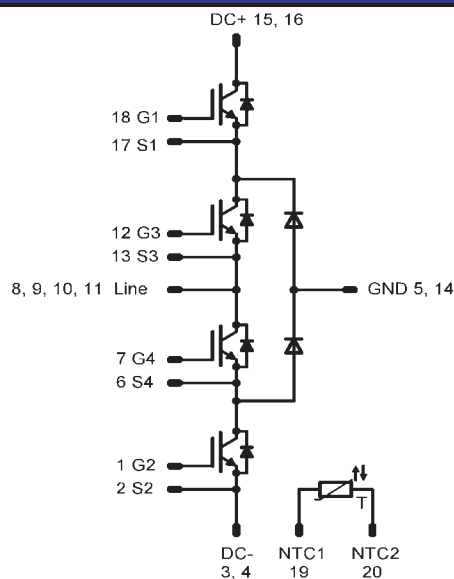
Version	Ordering Code	in DataMatrix as	in packaging barcode as
Standard in flow0 12mm housing	10-FZ06NIA075SA-P926F33	P926F33	P926F33

Outline

Pin table		
Pin	X	Y
1	33,6	0
2	30,8	0
3	22	0
4	19,2	0
5	10,1	0
6	2,8	0
7	0	0
8	0	7,1
9	0	9,9
10	0	12,7
11	0	15,5
12	0	22,6
13	2,8	22,6
14	10,1	22,6
15	19,2	22,6
16	22	22,6
17	30,8	22,6
18	33,6	22,6
19	33,6	14,8
20	33,6	8,2



Pinout



PRODUCT STATUS DEFINITIONS

Datasheet Status	Product Status	Definition
Target	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice. The data contained is exclusively intended for technically trained staff.
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data may be published at a later date. Vincotech reserves the right to make changes at any time without notice in order to improve design. The data contained is exclusively intended for technically trained staff.
Final	Full Production	This datasheet contains final specifications. Vincotech reserves the right to make changes at any time without notice in order to improve design. The data contained is exclusively intended for technically trained staff.

DISCLAIMER

The information given in this datasheet describes the type of component and does not represent assured characteristics. For tested values please contact Vincotech. Vincotech reserves the right to make changes without further notice to any products herein to improve reliability, function or design. Vincotech does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent rights, nor the rights of others.

LIFE SUPPORT POLICY

Vincotech products are not authorised for use as critical components in life support devices or systems without the express written approval of Vincotech.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in labelling can be reasonably expected to result in significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

单击下面可查看定价，库存，交付和生命周期等信息

[>>Vincotech\(威科\)](#)