Vincotech

30-FT10NIA400S7-LP59F08

datasheet

***flow*NPC 2** **1500 V / 400 A**

Features

- High speed IGBT
- Ultra-fast SiC diodes
- Three-level high efficient topology
- Integrated NTC

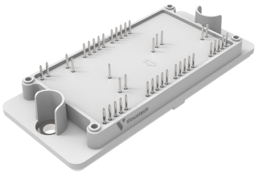
Target applications

- Solar Inverters

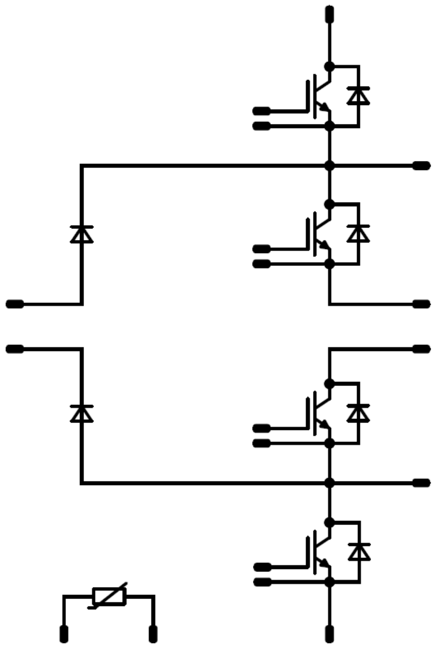
Types

- 30-FT10NIA400S7-LP59F08

flow 2 13 mm housing



Schematic



Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Conditions		Value	Unit
Buck Switch					
Collector-emitter voltage	V_{CES}			950	V
Collector current	I_C	$T_j = T_{jmax}$	T_s = 80 °C	263	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}		800	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	457	W
Gate-emitter voltage	V_{GES}			±20	V
Maximum junction temperature	T_{jmax}			175	°C
Buck Diode					
Peak repetitive reverse voltage	V_{RRM}			1200	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$	T_s = 80 °C	105	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}		455	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, t_p = 10 ms		650	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	224	W
Maximum junction temperature	T_{jmax}			175	°C
Boost Switch					
Collector-emitter voltage	V_{CES}			950	V
Collector current	I_C	$T_j = T_{jmax}$	T_s = 80 °C	328	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}		800	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	383	W
Gate-emitter voltage	V_{GES}			±20	V
Maximum junction temperature	T_{jmax}			175	°C

Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Conditions		Value	Unit
Boost Diode					
Peak repetitive reverse voltage	V_{RRM}			950	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$	T_s = 80 °C	108	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	188	W
Maximum junction temperature	T_{jmax}			175	°C
Boost Sw. Inv. Diode					
Peak repetitive reverse voltage	V_{RRM}			950	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$	T_s = 80 °C	108	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	188	W
Maximum junction temperature	T_{jmax}			175	°C
Module Properties					
Thermal Properties					
Storage temperature	T_{stg}			-40…+125	°C
Operation temperature under switching condition	T_{jop}			-40…+(T_{jmax} - 25)	°C
Isolation Properties					
Isolation voltage	V_{isol}	DC Test Voltage*	t_p = 2 s	6000	V
Creepage distance				min. 12,7	mm
Clearance				min, 12,7	mm
Comparative Tracking Index	CTI			≥ 600	

*100 % tested in production

Characteristic Values

Parameter	Symbol	Conditions					Values			Unit
			V_{GE} [V] V_{GS} [V]	V_{CE} [V] V_{DS} [V] V_F [V]	I_C [A] I_D [A] I_F [A]	T_j [°C]	Min	Typ	Max	
Buck Switch										
Static										
Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}$			0,0067	25	4,35	5,1	5,85	V
Collector-emitter saturation voltage	V_{CEsat}		15		400	25 125 150		1,67 1,95 2	2,35	V
Collector-emitter cut-off current	I_{CES}		0	950		25			8	µA
Gate-emitter leakage current	I_{GES}		20	0		25			400	nA
Internal gate resistance	r_g							0,375		Ω
Input capacitance	C_{ies}	f = 100 kHz	0	25		25		26000		pF
Reverse transfer capacitance	C_{res}							80		pF
Thermal										
Thermal resistance junction to sink*	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						0,21		K/W

*Only valid with pre-applied Vincotech thermal interface material.

Parameter	Symbol	Conditions	V_{GE} [V]	V_{CE} [V]	I_C [A]	T_j [°C]	Min	Typ	Max	Unit
Dynamic										
Turn-on delay time	$t_{d(on)}$	R_{gon} = 2 Ω R_{goff} = 2 Ω	±15	600	150	25 125 150		144,6 145 145,4		ns
Rise time	t_r					25 125 150		18,8 19,6 20		ns
Turn-off delay time	$t_{d(off)}$					25 125 150		154,4 199,8 210,6		ns
Fall time	t_f					25 125 150		19,3 27,62 28,91		ns
Turn-on energy (per pulse)	E_{on}	Q_{rFWD}=1,2 µC Q_{rFWD}=1,56 µC Q_{rFWD}=1,61 µC				25 125 150		2,12 2,16 2,24		mWs
Turn-off energy (per pulse)	E_{off}					25 125 150		4,64 6,88 7,46		mWs

Characteristic Values

Parameter	Symbol	Conditions					Values			Unit
			V_{GE} [V] V_{GS} [V]	V_{CE} [V] V_{DS} [V] V_F [V]	I_C [A] I_D [A] I_F [A]	T_j [°C]	Min	Typ	Max	
Buck Diode										
Static										
Forward voltage	V_F				100	25 125 150		1,51 1,77 1,91	1,8	V
Reverse leakage current	I_R	V_r = 1200 V				25		175	1000	µA
Thermal										
Thermal resistance junction to sink*	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						0,42		K/W

*Only valid with pre-applied Vincotech thermal interface material.

Parameter	Symbol	Conditions	V_{GE} [V]	V_{CE} [V]	I_F [A]	T_j [°C]	Min	Typ	Max	Unit
Dynamic										
Peak recovery current	I_{RRM}	d*i*/d*t*=9061 A/µs d*i*/d*t*=8999 A/µs d*i*/d*t*=8575 A/µs	±15	600	150	25 125 150		105,42 114,1 115,58		A
Reverse recovery time	t_{rr}					25 125 150		40,16 41,08 41,49		ns
Recovered charge	Q_r					25 125 150		1,2 1,56 1,61		µC
Reverse recovered energy	E_{rec}					25 125 150		0,174 0,318 0,338		mWs
Peak rate of fall of recovery current	$(di_{rf}/dt)_{max}$					25 125 150		7251 6840 6589		A/µs

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Characteristic Values

Parameter	Symbol	Conditions	V_{GE} [V] V_{GS} [V]	V_{CE} [V] V_{DS} [V] V_F [V]	I_C [A] I_D [A] I_F [A]	T_j [°C]	Min	Typ	Max	Unit
Boost Switch										
Static										
Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}$			0,0065	25	4,15	4,85	5,65	V
Collector-emitter saturation voltage	V_{CEsat}		15		400	25 125 150		1,2 1,23 1,24	1,4	V
Collector-emitter cut-off current	I_{CES}		0	950		25			8	µA
Gate-emitter leakage current	I_{GES}		20	0		25			200	nA
Internal gate resistance	r_g							0,75		Ω
Input capacitance	C_{ies}	f = 100 kHz	0	25		25		49200		pF
Reverse transfer capacitance	C_{res}							220		pF
Thermal										
Thermal resistance junction to sink*	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						0,25		K/W

*Only valid with pre-applied Vincotech thermal interface material.

Parameter	Symbol	Conditions	V_{GE} [V] V_{GS} [V]	V_{CE} [V] V_{DS} [V] V_F [V]	I_C [A] I_D [A] I_F [A]	T_j [°C]	Min	Typ	Max	Unit
Dynamic										
Turn-on delay time	$t_{d(on)}$	R_{gon} = 2 Ω R_{goff} = 2 Ω	±15	600	150	25 125 150		359,8 365,6 368,4		ns
Rise time	t_r					25 125 150		20 24,2 24,2		ns
Turn-off delay time	$t_{d(off)}$					25 125 150		507,8 593,4 619,2		ns
Fall time	t_f					25 125 150		56,15 325,53 468,38		ns
Turn-on energy (per pulse)	E_{on}	Q_{rFWD}=6,05 µC Q_{rFWD}=11,62 µC Q_{rFWD}=13,74 µC				25 125 150		2,74 3,7 3,98		mWs
Turn-off energy (per pulse)	E_{off}					25 125 150		25,76 40,03 42,73		mWs

Characteristic Values

Parameter	Symbol	Conditions					Values			Unit
			V_{GE} [V] V_{GS} [V]	V_{CE} [V] V_{DS} [V] V_F [V]	I_C [A] I_D [A] I_F [A]	T_j [°C]	Min	Typ	Max	
Boost Diode										
Static										
Forward voltage	V_F				200	25 125 150	2,1	2,65 2,44 2,36	2,8	V
Reverse leakage current	I_R	V_r = 950 V				25			8	µA
Thermal										
Thermal resistance junction to sink*	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						0,51		K/W

*Only valid with pre-applied Vincotech thermal interface material.

Parameter	Symbol	Conditions	V_{GE} [V]	V_{CE} [V]	I_C [A]	T_j [°C]	Min	Typ	Max	Unit
Dynamic										
Peak recovery current	I_{RRM}	di/dt=7523 A/µs di/dt=6747 A/µs di/dt=6754 A/µs	±15	600	150	25 125 150		160,09 204,77 218,18		A
Reverse recovery time	t_{rr}					25 125 150		69,76 133,88 151,09		ns
Recovered charge	Q_r					25 125 150		6,05 11,62 13,74		µC
Reverse recovered energy	E_{rec}					25 125 150		2,2 4,61 5,51		mWs
Peak rate of fall of recovery current	$(di_{rf}/dt)_{max}$					25 125 150		5242 4762 4633		A/µs

Characteristic Values

Parameter	Symbol	Conditions					Values			Unit
			V_{GE} [V] V_{GS} [V]	V_{CE} [V] V_{DS} [V] V_F [V]	I_C [A] I_D [A] I_F [A]	T_j [°C]	Min	Typ	Max	
Boost Sw. Inv. Diode										
Static										
Forward voltage	V_F				200	25 125 150	2,1	2,65 2,44 2,36	2,8	V
Reverse leakage current	I_R	V_r = 950 V				25			8	µA
Thermal										
Thermal resistance junction to sink*	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						0,51		K/W

*Only valid with pre-applied Vincotech thermal interface material.

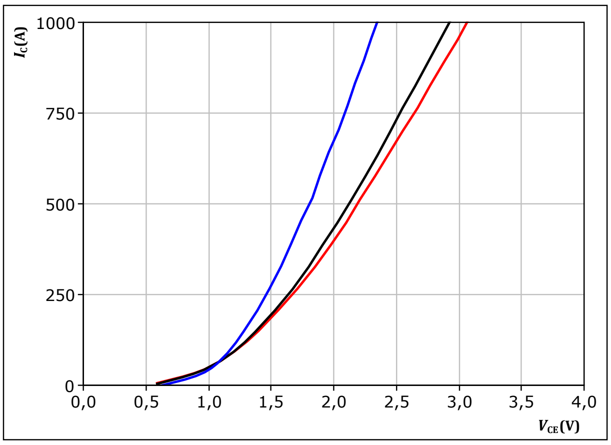
Parameter	Symbol	Conditions					Min	Typ	Max	Unit
Thermistor										
Static										
Rated resistance	R					25		22		kΩ
Deviation of R_{100}	$\Delta_{R/R}$	R_{100} = 1484 Ω				100	-5		5	%
Power dissipation	P							5		mW
Power dissipation constant	d					25		1,5		mW/K
B-value	$B_{(25/50)}$	Tol. ±1 %						3962		K
B-value	$B_{(25/100)}$	Tol. ±1 %						4000		K
Vincotech Thermistor Reference									I	

Buck Switch Characteristics

figure 1. IGBT

Typical output characteristics

$I_C = f(V_{CE})$

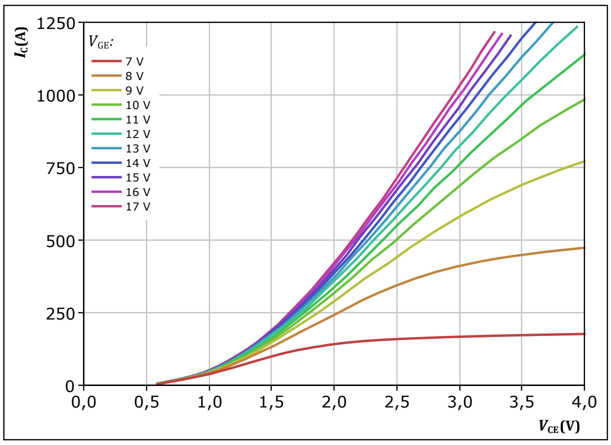


t_p =	250	μs	
V_{GE} =	15	V	T_j: 25 °C / 125 °C / 150 °C

figure 2. IGBT

Typical output characteristics

$I_C = f(V_{CE})$



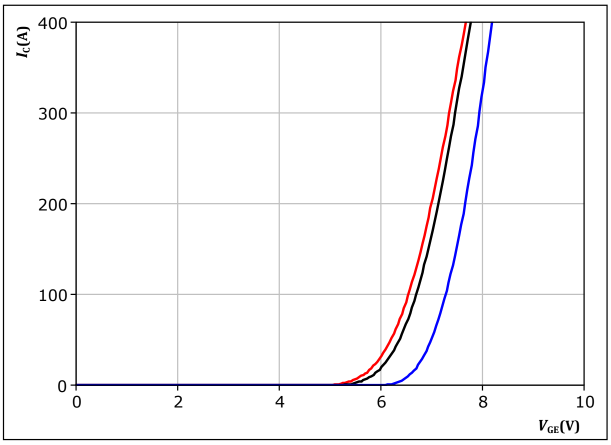
t_p =	250	μs
T_j =	150	°C

V_{GE} from 7 V to 17 V in steps of 1 V

figure 3. IGBT

Typical transfer characteristics

$I_C = f(V_{GE})$

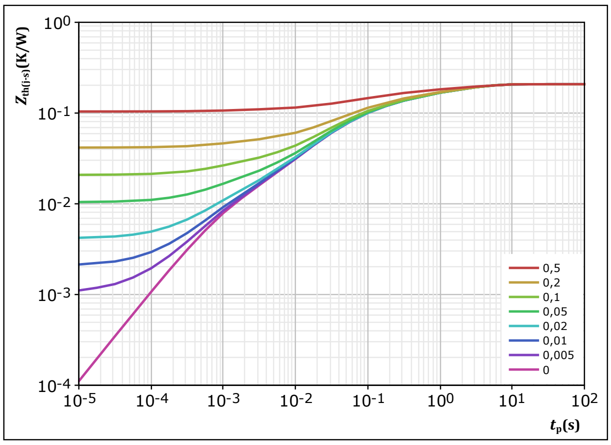


t_p =	250	μs	
V_{CE} =	10	V	T_j: 25 °C / 125 °C / 150 °C

figure 4. IGBT

Transient thermal impedance as a function of pulse width

$Z_{th(j-s)} = f(t_p)$



D =	t_p / T	
$R_{th(j-s)}$ =	0,208	K/W

IGBT thermal model values

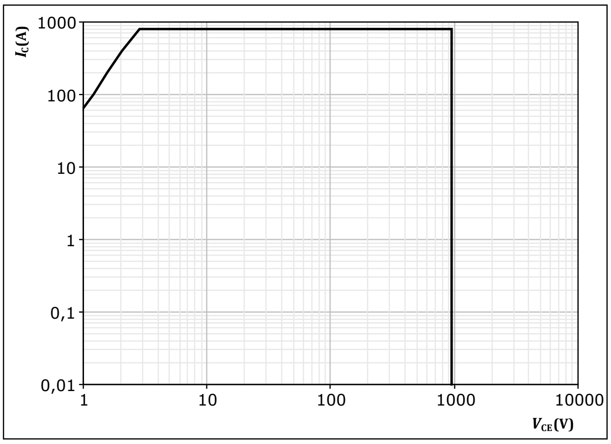
R (K/W)	τ (s)
5,44E-02	2,48E+00
4,87E-02	4,00E-01
6,94E-02	7,27E-02
2,76E-02	1,58E-02
7,97E-03	9,66E-04

Buck Switch Characteristics

figure 5.	IGBT

Safe operating area

$I_C = f(V_{CE})$



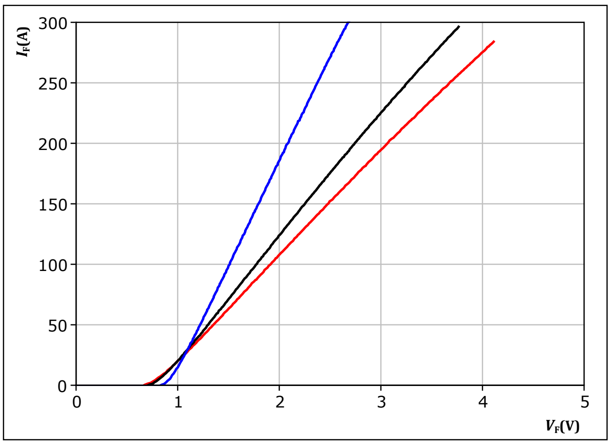
D =	single pulse	
T_s =	80	°C
V_{GE} =	15	V
T_j =	T_{jmax}	

Buck Diode Characteristics

figure 6. **FWD**

Typical forward characteristics

I_F = f(V_F)



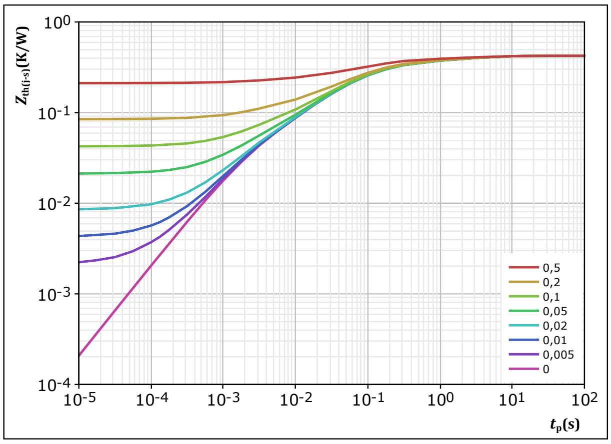
t_p = 250 µs

T_j: 25 °C, 125 °C, 150 °C

figure 7. **FWD**

Transient thermal impedance as a function of pulse width

$Z_{th(j-s)}$ = f(t_p)



D = t_p / T

$R_{th(j-s)}$ = 0,423 K/W

IGBT thermal model values

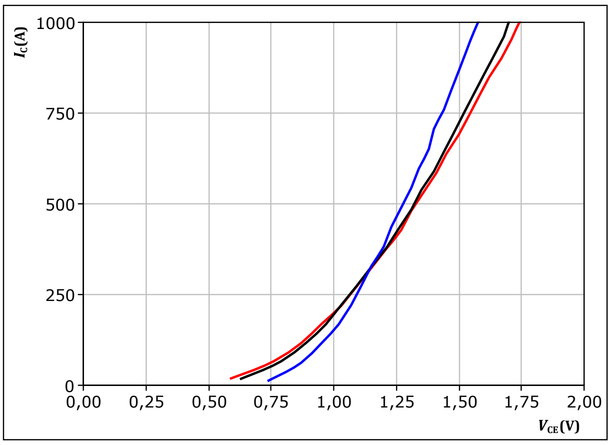
R (K/W)	τ (s)
4,71E-02	4,17E+00
7,03E-02	5,54E-01
2,01E-01	8,33E-02
7,65E-02	1,63E-02
2,83E-02	2,09E-03

Boost Switch Characteristics

figure 8. **IGBT**

Typical output characteristics

I_C = f(V_{CE})

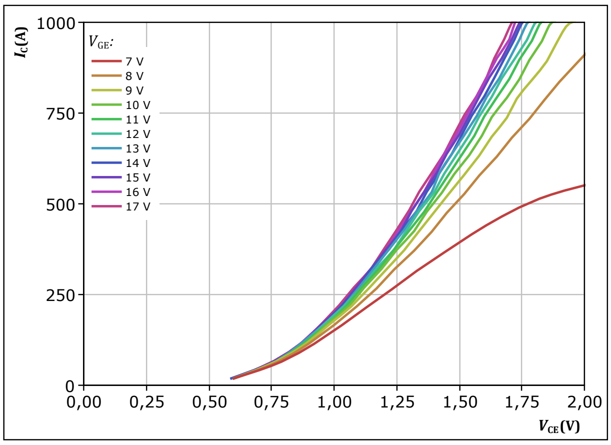


t_p =	250	µs		25 °C
V_{GE} =	15	V	T_j:	125 °C
				150 °C

figure 9. **IGBT**

Typical output characteristics

I_C = f(V_{CE})



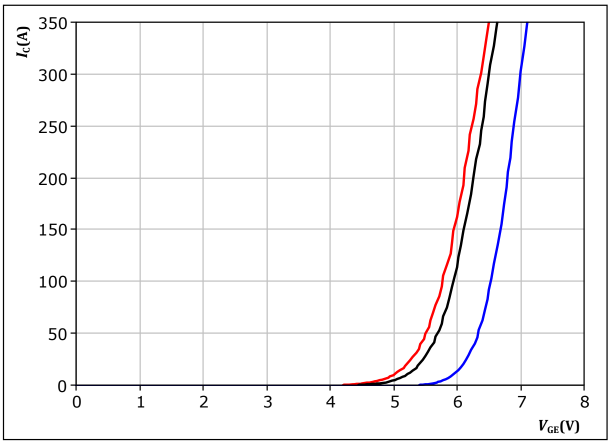
t_p =	250	µs
T_j =	150	°C

V_{GE} from 7 V to 17 V in steps of 1 V

figure 10. **IGBT**

Typical transfer characteristics

I_C = f(V_{GE})

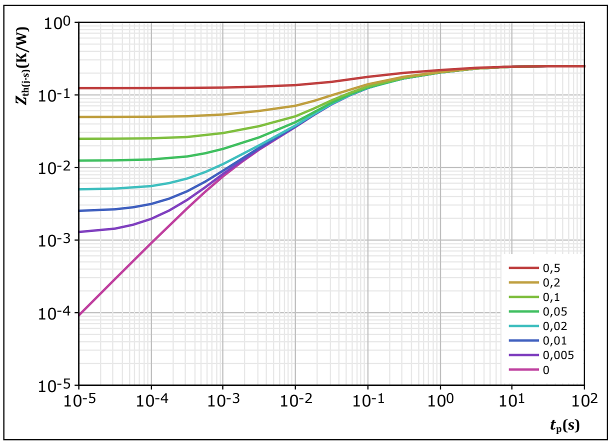


t_p =	250	µs		25 °C
V_{CE} =	11	V	T_j:	125 °C
				150 °C

figure 11. **IGBT**

Transient thermal impedance as a function of pulse width

$Z_{th(j-s)}$ = f(t_p)



D = t_p / T

$R_{th(j-s)}$ = 0,248 K/W

IGBT thermal model values

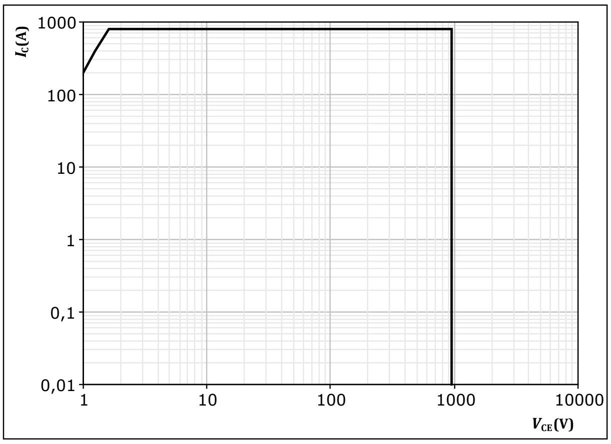
R (K/W)	τ (s)
3,15E-02	4,33E+00
5,84E-02	8,97E-01
7,49E-02	1,46E-01
7,33E-02	3,02E-02
1,00E-02	1,61E-03

Boost Switch Characteristics

figure 12.	IGBT

Safe operating area

I_C = f(V_{CE})



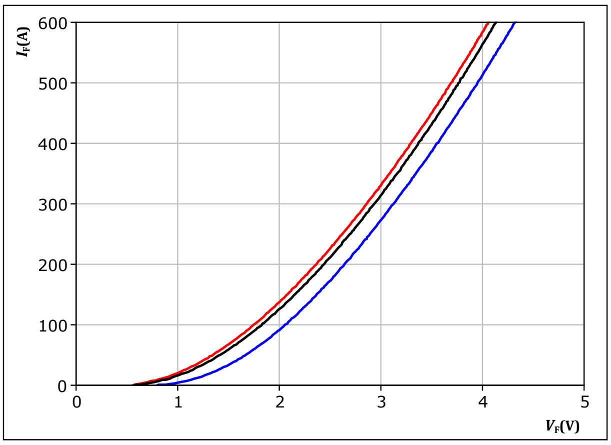
D =	single pulse	
T_s =	80	°C
V_{GE} =	15	V
T_j =	T_{jmax}	

Boost Diode Characteristics

figure 13. **FWD**

Typical forward characteristics

$I_F = f(V_F)$



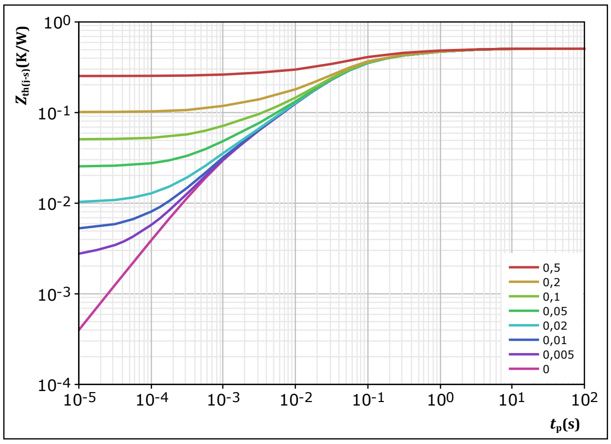
t_p = 250 μs

T_j: 25 °C, 125 °C, 150 °C

figure 14. **FWD**

Transient thermal impedance as a function of pulse width

$Z_{th(j-s)} = f(t_p)$



$D = t_p / T$

$R_{th(j-s)}$ = 0,507 K/W

IGBT thermal model values

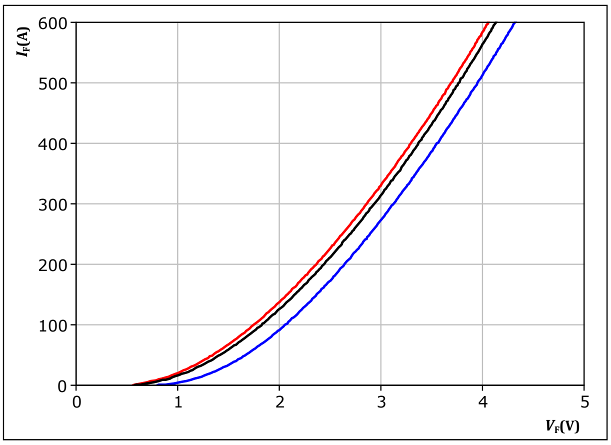
R (K/W)	τ (s)
5,51E-02	2,05E+00
1,05E-01	2,60E-01
2,42E-01	4,82E-02
7,71E-02	1,01E-02
2,81E-02	1,04E-03

Boost Sw. Inv. Diode Characteristics

figure 15. FWD

Typical forward characteristics

$I_F = f(V_F)$



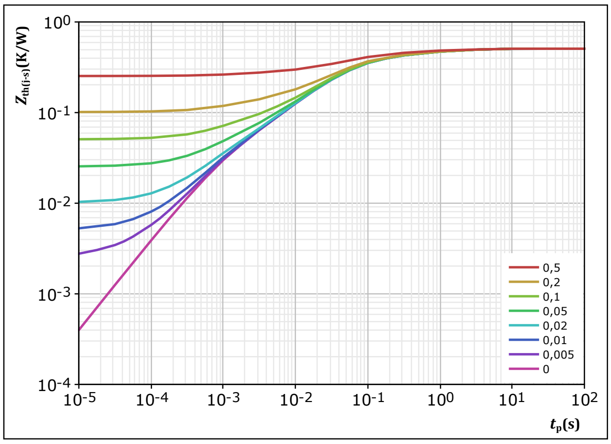
t_p = 250 μs

T_j: 25 °C, 125 °C, 150 °C

figure 16. FWD

Transient thermal impedance as a function of pulse width

$Z_{th(j-s)} = f(t_p)$



$D = t_p / T$

$R_{th(j-s)}$ = 0,507 K/W

IGBT thermal model values

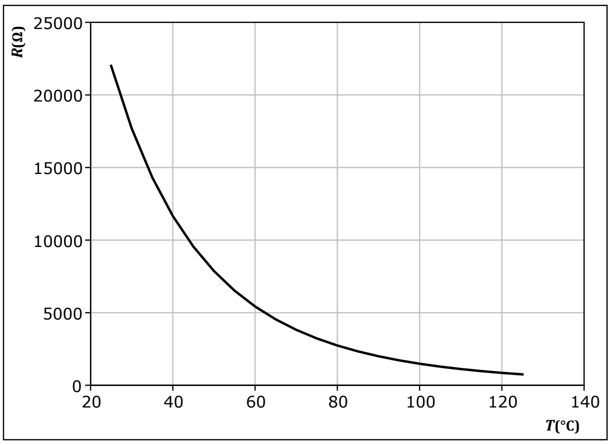
R (K/W)	τ (s)
5,51E-02	2,05E+00
1,05E-01	2,60E-01
2,42E-01	4,82E-02
7,71E-02	1,01E-02
2,81E-02	1,04E-03

Thermistor Characteristics

figure 17.	Thermistor

Typical NTC characteristic as function of temperature

R_T = f(T)

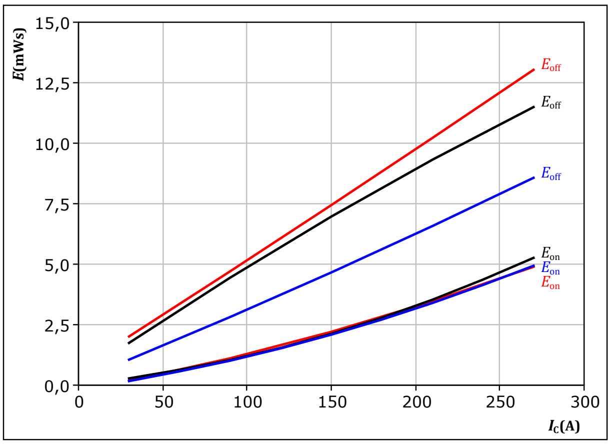


Buck Switching Characteristics

figure 18. IGBT

Typical switching energy losses as a function of collector current

$E = f(I_C)$



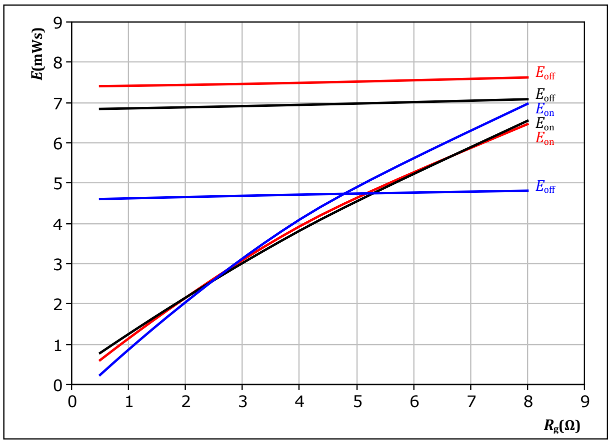
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C / 125 °C / 150 °C
V_{GE} =	±15	V		
R_{gon} =	2	Ω		
R_{goff} =	2	Ω		

figure 19. IGBT

Typical switching energy losses as a function of gate resistor

$E = f(R_g)$



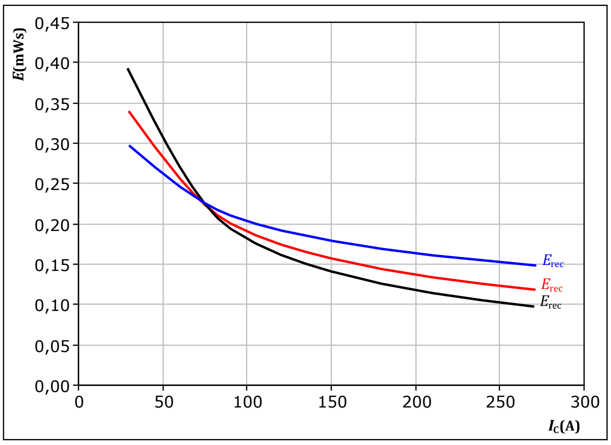
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C / 125 °C / 150 °C
V_{GE} =	±15	V		
I_C =	150	A		

figure 20. FWD

Typical reverse recovered energy loss as a function of collector current

$E_{rec} = f(I_C)$



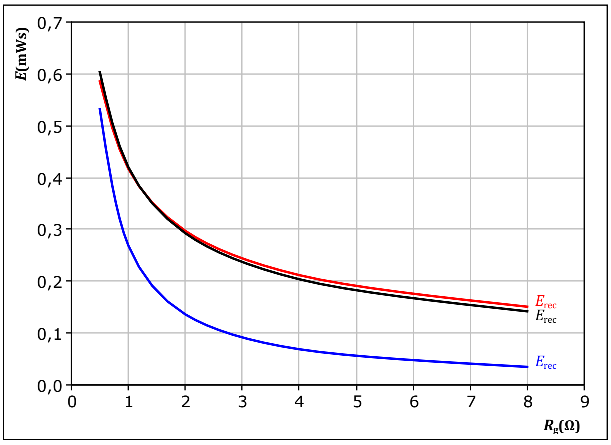
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C / 125 °C / 150 °C
V_{GE} =	±15	V		
R_{gon} =	2	Ω		

figure 21. FWD

Typical reverse recovered energy loss as a function of gate resistor

$E_{rec} = f(R_g)$



With an inductive load at

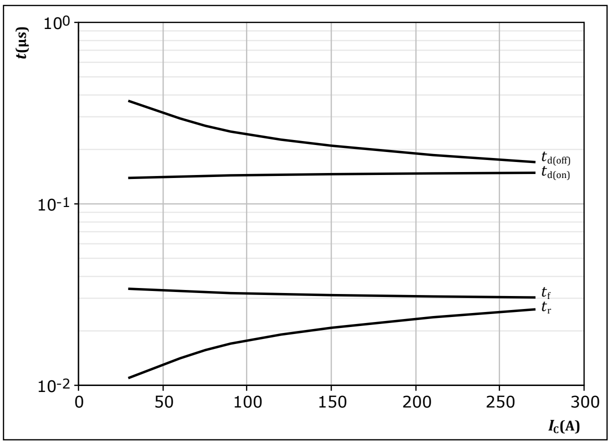
V_{CE} =	600	V	T_j:	25 °C / 125 °C / 150 °C
V_{GE} =	±15	V		
I_C =	150	A		

Buck Switching Characteristics

figure 22. **IGBT**

Typical switching times as a function of collector current

t = f(I_C)



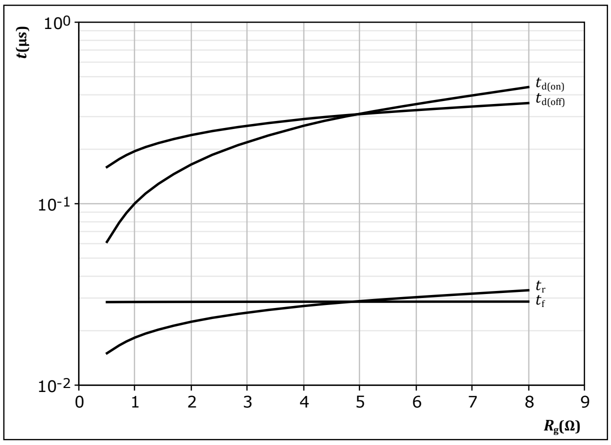
With an inductive load at

T_j =	150	°C
V_{CE} =	600	V
V_{GE} =	±15	V
R_{gon} =	2	Ω
R_{goff} =	2	Ω

figure 23. **IGBT**

Typical switching times as a function of gate resistor

t = f(R_g)



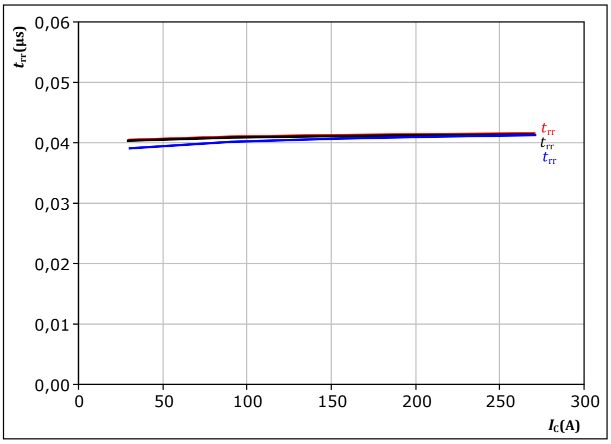
With an inductive load at

T_j =	150	°C
V_{CE} =	600	V
V_{GE} =	±15	V
I_C =	150	A

figure 24. **FWD**

Typical reverse recovery time as a function of collector current

t_{rr} = f(I_C)



With an inductive load at

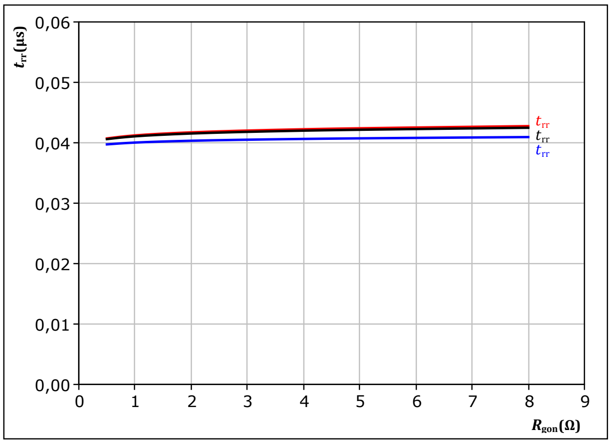
V_{CE} =	600	V
V_{GE} =	±15	V
R_{gon} =	2	Ω

T_j: 25 °C, 125 °C, 150 °C

figure 25. **FWD**

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

t_{rr} = f(R_{gon})



With an inductive load at

V_{CE} =	600	V
V_{GE} =	±15	V
I_C =	150	A

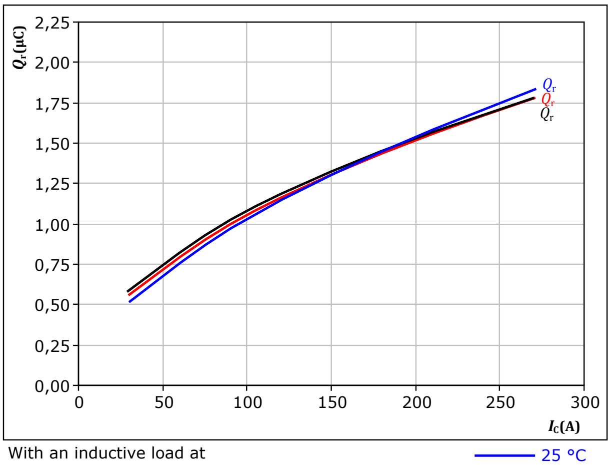
T_j: 25 °C, 125 °C, 150 °C

Buck Switching Characteristics

figure 26. FWD

Typical recovered charge as a function of collector current

$Q_r = f(I_C)$



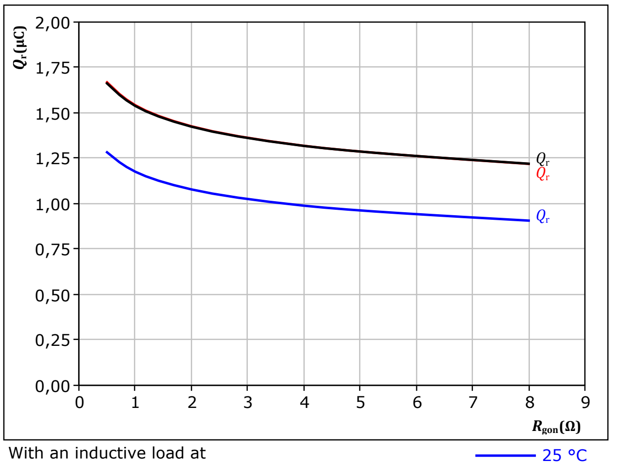
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
R_{gon} =	2	Ω		150 °C

figure 27. FWD

Typical recovered charge as a function of turn on gate resistor

$Q_r = f(R_{gon})$



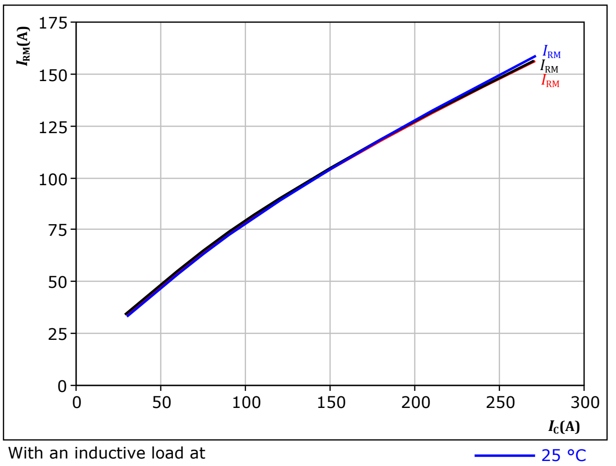
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
I_C =	150	A		150 °C

figure 28. FWD

Typical peak reverse recovery current as a function of collector current

$I_{RM} = f(I_C)$



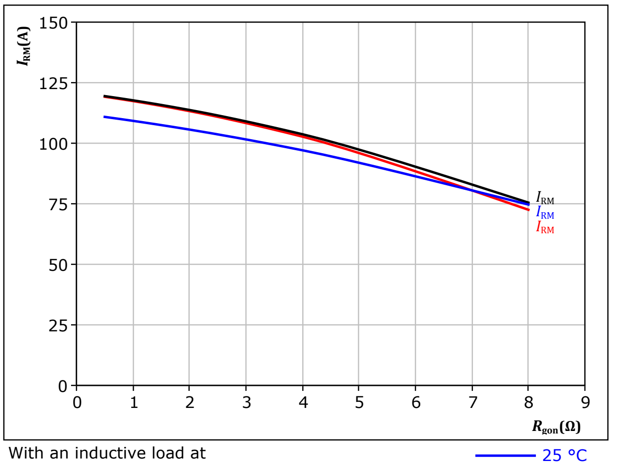
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
R_{gon} =	2	Ω		150 °C

figure 29. FWD

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

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



With an inductive load at

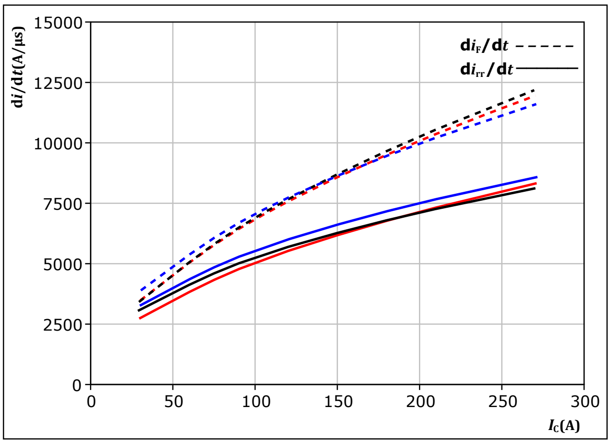
V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
I_C =	150	A		150 °C

Buck Switching Characteristics

figure 30. **FWD**

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

di_F/dt, di_{rr}/dt = f(I_C)



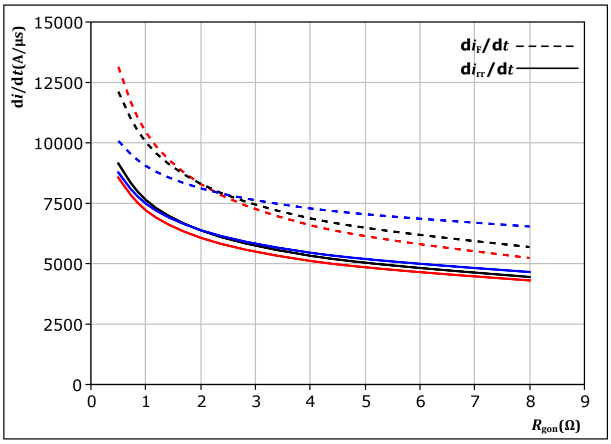
With an inductive load at

V_{CE} =	600	V	T_j: 25 °C
V_{GE} =	±15	V	125 °C
R_{gon} =	2	Ω	150 °C

figure 31. **FWD**

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

di_F/dt, di_{rr}/dt = f(R_{gon})



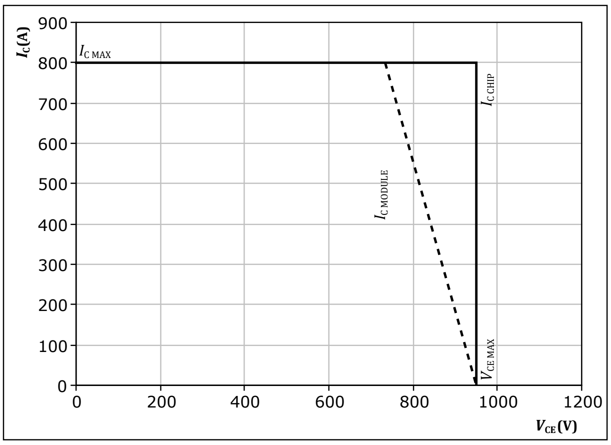
With an inductive load at

V_{CE} =	600	V	T_j: 25 °C
V_{GE} =	±15	V	125 °C
I_C =	150	A	150 °C

figure 32. **IGBT**

Reverse bias safe operating area

I_C = f(V_{CE})



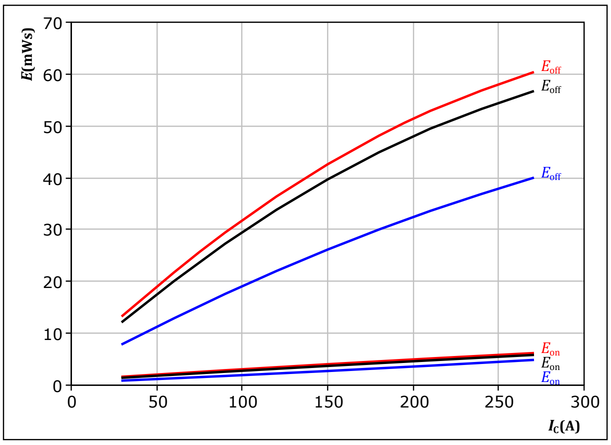
At	T_j =	150	°C
	R_{gon} =	2	Ω
	R_{goff} =	2	Ω

Boost Switching Characteristics

figure 33. **IGBT**

Typical switching energy losses as a function of collector current

$E = f(I_C)$



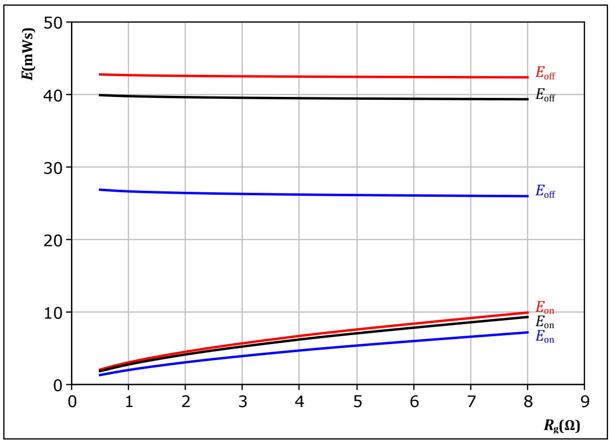
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
R_{gon} =	2	Ω		150 °C
R_{goff} =	2	Ω		

figure 34. **IGBT**

Typical switching energy losses as a function of gate resistor

$E = f(R_g)$



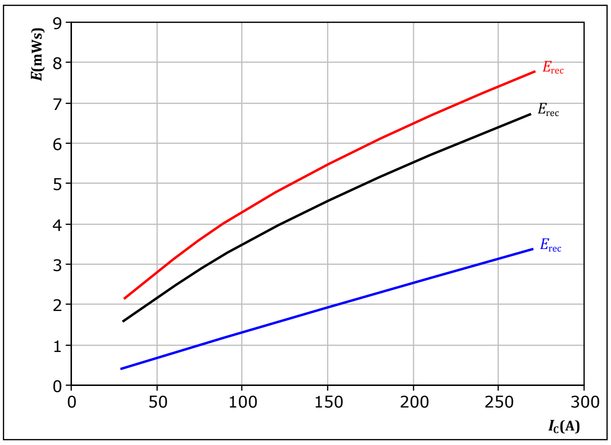
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
I_C =	150	A		150 °C

figure 35. **FWD**

Typical reverse recovered energy loss as a function of collector current

$E_{rec} = f(I_C)$



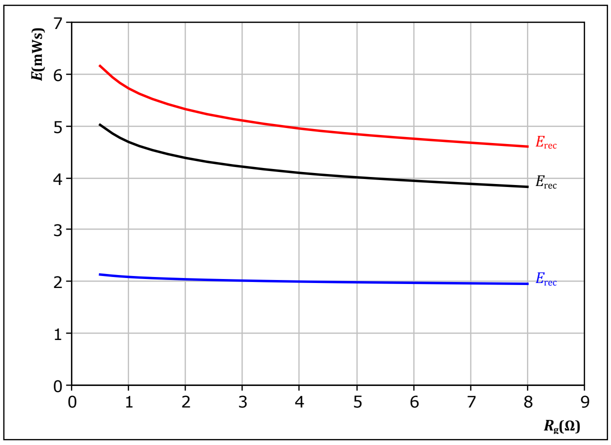
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
R_{gon} =	2	Ω		150 °C

figure 36. **FWD**

Typical reverse recovered energy loss as a function of gate resistor

$E_{rec} = f(R_g)$



With an inductive load at

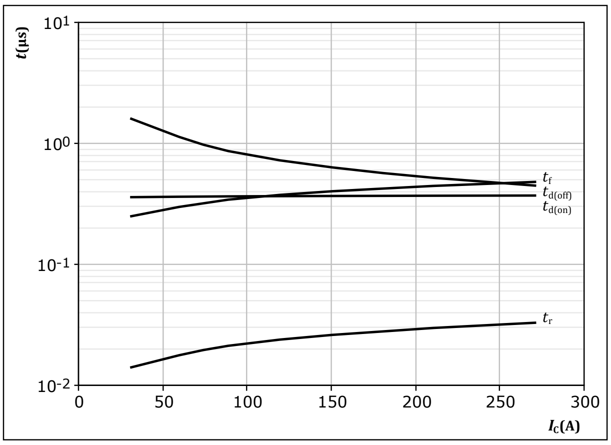
V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
I_C =	150	A		150 °C

Boost Switching Characteristics

figure 37. **IGBT**

Typical switching times as a function of collector current

$t = f(I_C)$



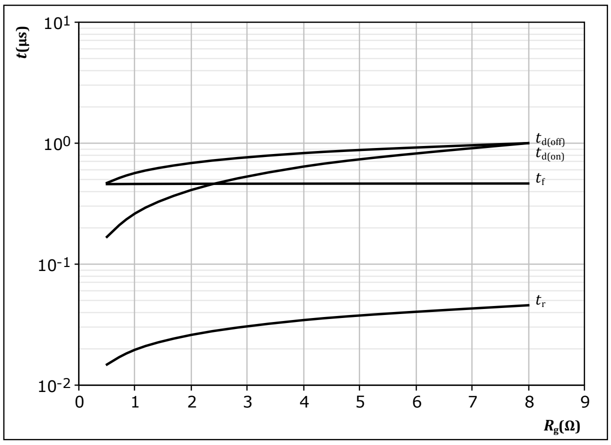
With an inductive load at

T_j =	150	°C
V_{CE} =	600	V
V_{GE} =	±15	V
R_{gon} =	2	Ω
R_{goff} =	2	Ω

figure 38. **IGBT**

Typical switching times as a function of gate resistor

$t = f(R_g)$



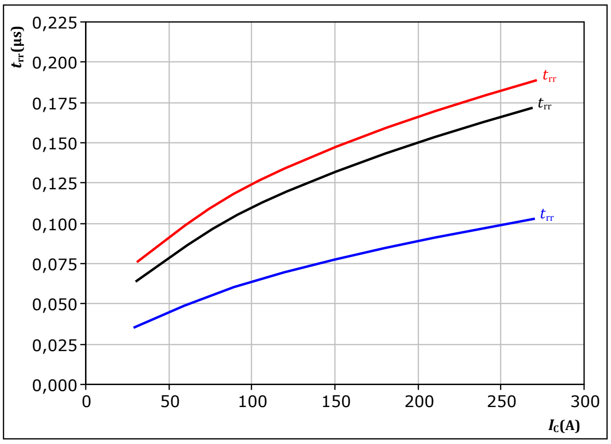
With an inductive load at

T_j =	150	°C
V_{CE} =	600	V
V_{GE} =	±15	V
I_C =	150	A

figure 39. **FWD**

Typical reverse recovery time as a function of collector current

$t_{rr} = f(I_C)$



With an inductive load at

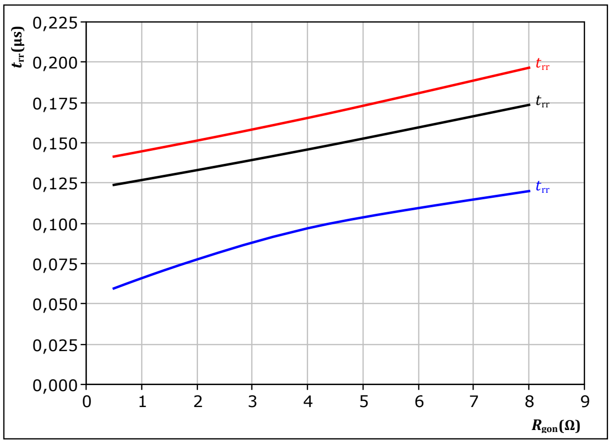
V_{CE} =	600	V
V_{GE} =	±15	V
R_{gon} =	2	Ω

T_j: 25 °C, 125 °C, 150 °C

figure 40. **FWD**

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

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



With an inductive load at

V_{CE} =	600	V
V_{GE} =	±15	V
I_C =	150	A

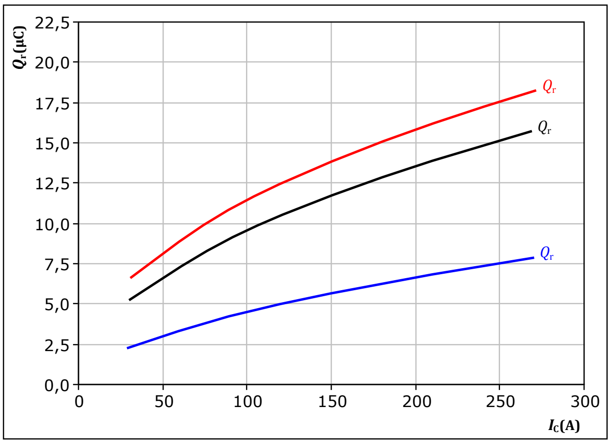
T_j: 25 °C, 125 °C, 150 °C

Boost Switching Characteristics

figure 41. FWD

Typical recovered charge as a function of collector current

Q_r = f(I_C)



With an inductive load at

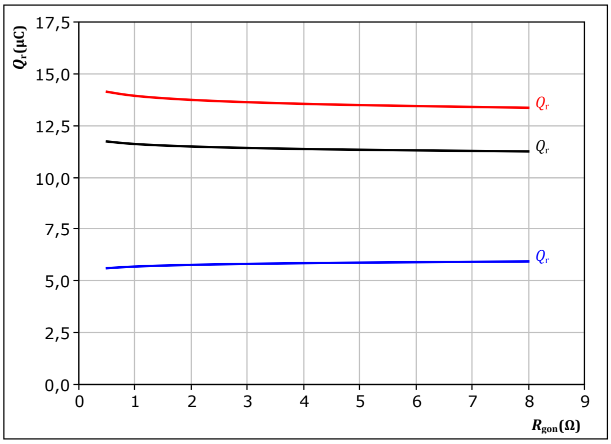
V_{CE} = 600 V
V_{GE} = ±15 V
R_{gon} = 2 Ω

T_j: 25 °C, 125 °C, 150 °C

figure 42. FWD

Typical recovered charge as a function of turn on gate resistor

Q_r = f(R_{gon})



With an inductive load at

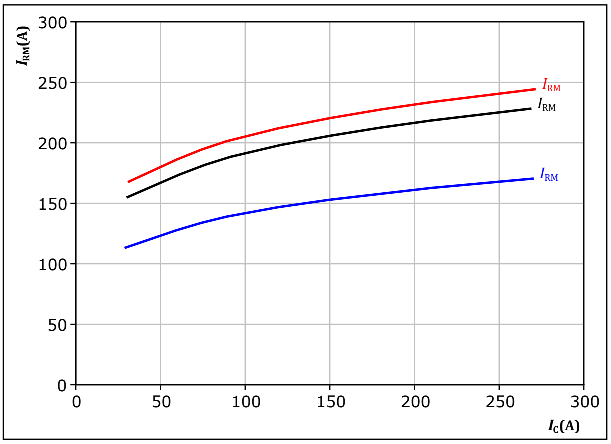
V_{CE} = 600 V
V_{GE} = ±15 V
I_C = 150 A

T_j: 25 °C, 125 °C, 150 °C

figure 43. FWD

Typical peak reverse recovery current as a function of collector current

I_{RM} = f(I_C)



With an inductive load at

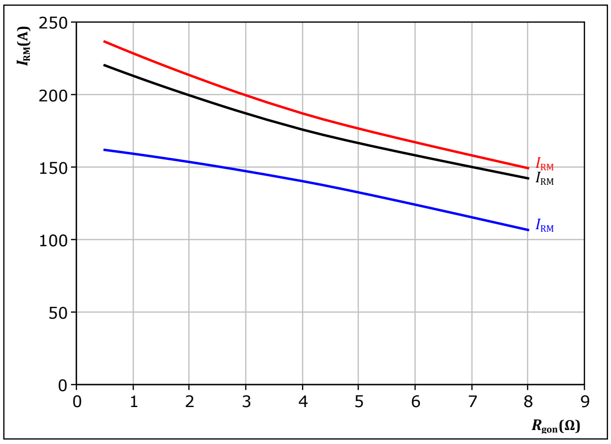
V_{CE} = 600 V
V_{GE} = ±15 V
R_{gon} = 2 Ω

T_j: 25 °C, 125 °C, 150 °C

figure 44. FWD

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

I_{RM} = f(R_{gon})



With an inductive load at

V_{CE} = 600 V
V_{GE} = ±15 V
I_C = 150 A

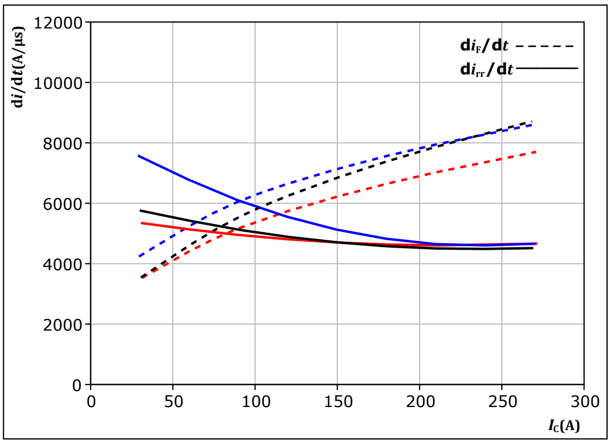
T_j: 25 °C, 125 °C, 150 °C

Boost Switching Characteristics

figure 45. **FWD**

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

di_F/dt, di_{rr}/dt = f(I_C)



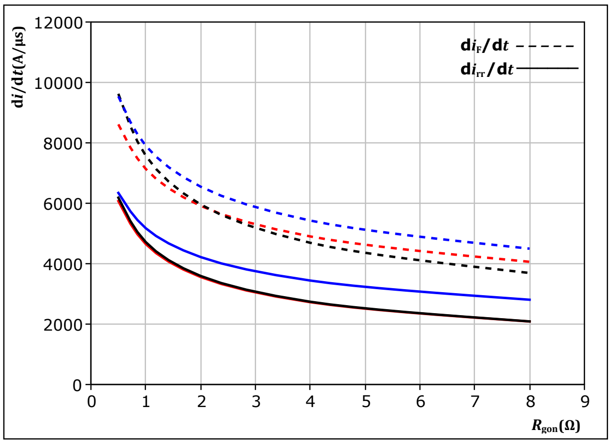
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
R_{gon} =	2	Ω		150 °C

figure 46. **FWD**

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

di_F/dt, di_{rr}/dt = f(R_{gon})



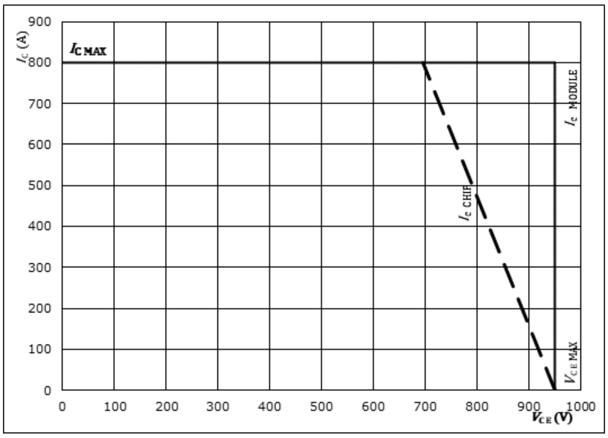
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
I_C =	150	A		150 °C

figure 47. **IGBT**

Reverse bias safe operating area

I_C = f(V_{CE})



At	T_j =	150	°C
	R_{gon} =	2	Ω
	R_{goff} =	2	Ω

Switching Definitions

figure 48. **IGBT**

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

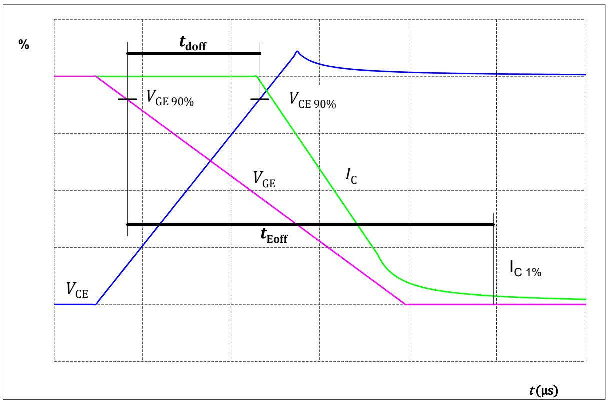


figure 49. **IGBT**

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

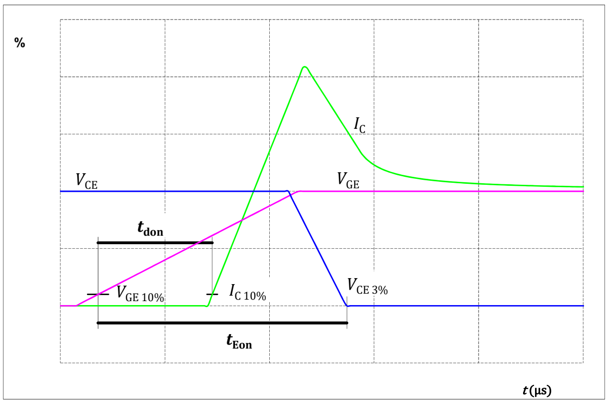


figure 50. **IGBT**

Turn-off Switching Waveforms & definition of t_f

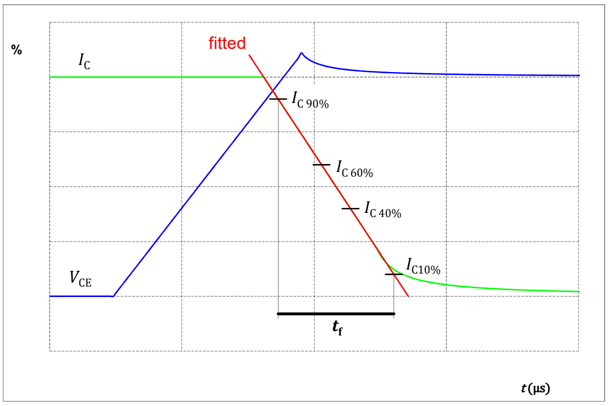
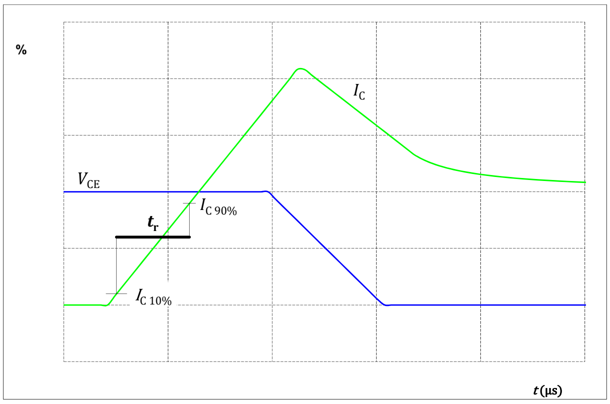


figure 51. **IGBT**

Turn-on Switching Waveforms & definition of t_r



Switching Definitions

figure 52.	FWD

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

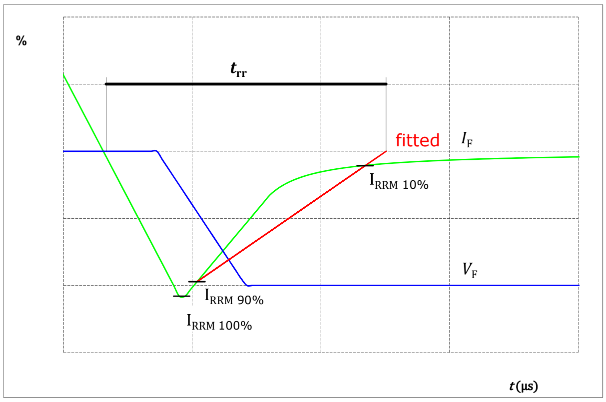
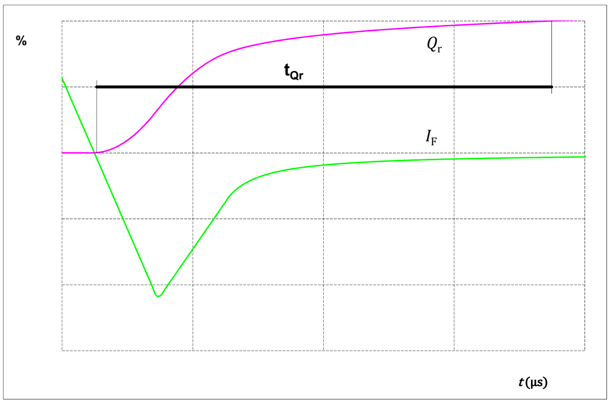


figure 53.	FWD

Turn-on Switching Waveforms & definition of t_{Qr} **(** t_{Qr} **= integrating time for** Q_r**)**



30-FT10NIA400S7-LP59F08
datasheet

Ordering Code

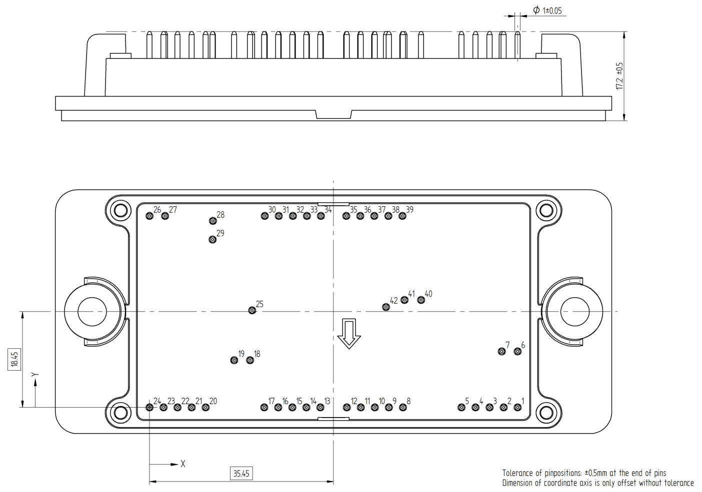
Version	Ordering Code
Without thermal paste	30-FT10NIA400S7-LP59F08
With thermal paste	30-FT10NIA400S7-LP59F08-/3/

Marking

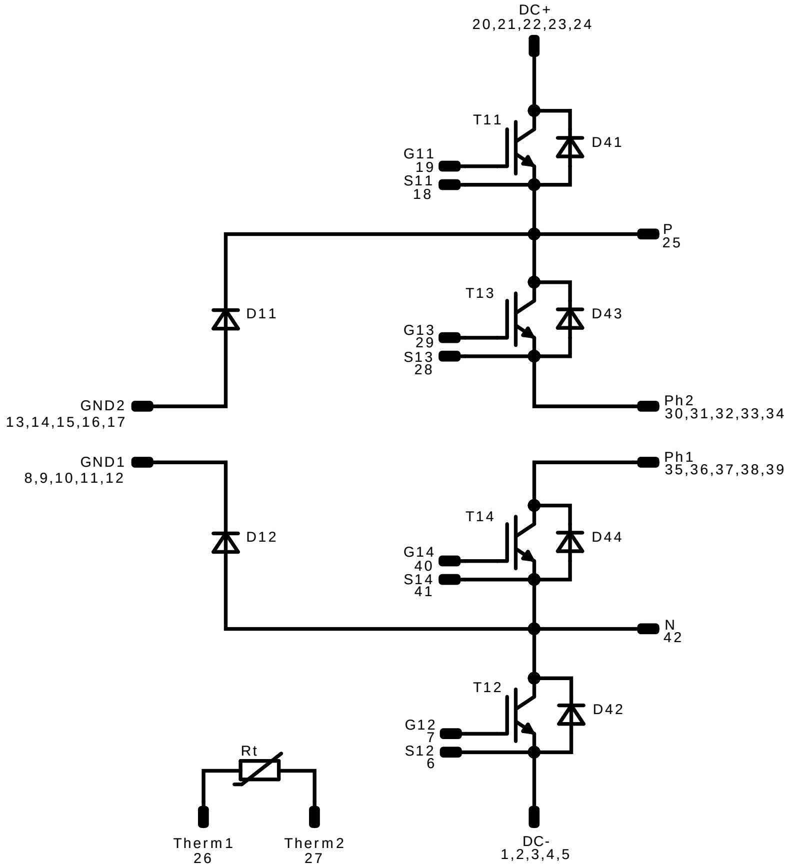
	Name		Date code	UL & VIN	Lot	Serial
Text	NN-NNNNNNNNNNNNNN-TTTTTTVV		WWYY	UL VIN	LLLLL	SSSS
Datamatrix	Type&Ver	Lot number	Serial	Date code		
	TTTTTTTVV	LLLLL	SSSS	WWYY		

Outline

Pin table [mm]			
Pin	X	Y	Function
1	70,9	0	DC-
2	68,2	0	DC-
3	65,5	0	DC-
4	62,8	0	DC-
5	60,1	0	DC-
6	70,9	10,8	S12
7	67,85	10,8	G12
8	48,8	0	GND1
9	46,1	0	GND1
10	43,4	0	GND1
11	40,7	0	GND1
12	38	0	GND1
13	32,9	0	GND2
14	30,2	0	GND2
15	27,5	0	GND2
16	24,8	0	GND2
17	22,1	0	GND2
18	19,35	9,1	S11
19	16,3	9,1	G11
20	10,8	0	DC+
21	8,1	0	DC+
22	5,4	0	DC+
23	2,7	0	DC+
24	0	0	DC+
25	19,75	18,7	P
26	0	36,9	Therm1
27	3	36,9	Therm2
28	12,2	35,95	S13
29	12,15	32,35	G13
30	22,2	36,9	Ph2
31	24,9	36,9	Ph2
32	27,6	36,9	Ph2
33	30,3	36,9	Ph2
34	33	36,9	Ph2
35	37,9	36,9	Ph1
36	40,6	36,9	Ph1
37	43,3	36,9	Ph1
38	46	36,9	Ph1
39	48,7	36,9	Ph1
40	52,3	20,7	G14
41	49,1	20,7	S14
42	45,55	19,35	N



Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
T11, T12	IGBT	950 V	400 A	Buck Switch	
D11, D12	FWD	1200 V	100 A	Buck Diode	
T13, T16	IGBT	950 V	400 A	Boost Switch	
D41, D42	FWD	950 V	200 A	Boost Diode	
D43, D44	FWD	950 V	200 A	Boost Sw. Inv. Diode	
Rt	NTC			Thermistor	

Packaging instruction				
Standard packaging quantity (SPQ) 36	>SPQ	Standard	<SPQ	Sample

Handling instruction
Handling instructions for *flow* 2 packages see vincotech.com website.

Package data
Package data for *flow* 2 packages see vincotech.com website.

UL recognition and file number
This device is certified according to UL 1557 standard, UL file number E192116. For more information see vincotech.com website.

Document No.:	Date:	Modification:	Pages
30-FT10NIA400S7-LP59F08-D1-14	17 Feb. 2020	Initial release	
30-FT10NIA400S7-LP59F08-D2-14	23 Apr. 2020	Correct RBSOA of Boost Switch	24

单击下面可查看定价，库存，交付和生命周期等信息

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