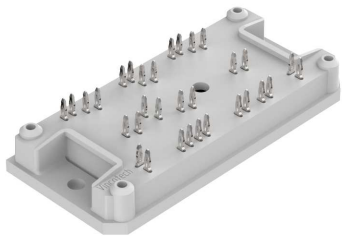
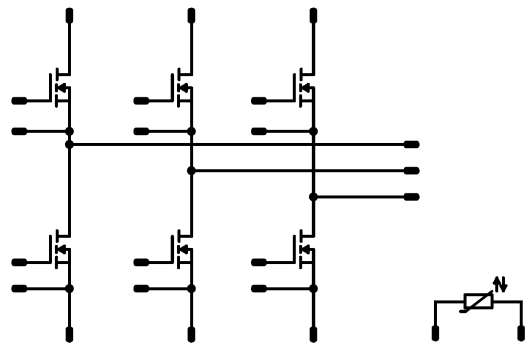




Vincotech

<i>flowPACK 1</i>	1200 V / 40 mΩ
<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center; background-color: #cccccc; margin: 0;">Features</p> <ul style="list-style-type: none"> 3x half-bridge Thermistor </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center; background-color: #cccccc; margin: 0;">Target applications</p> <ul style="list-style-type: none"> Power Supply </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #cccccc; margin: 0;">Types</p> <ul style="list-style-type: none"> 10-PY126PA040MR-L226F28Y </div>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center; background-color: #cccccc; margin: 0;"><i>flow 1</i> 12 mm housing</p>  </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #cccccc; margin: 0;">Schematic</p>  </div>

Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
Inverter Switch				
Drain-source voltage	V_{DSS}		1200	V
Drain current	I_D	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	28	A
Peak drain current	I_{DM}	t_p limited by T_{jmax}	137	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	61	W
Gate-source voltage	V_{GS}		-4/22	V
Maximum Junction Temperature	T_{jmax}		175	°C



Vincotech

Maximum Ratings

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

Parameter	Symbol	Condition	Value	Unit
-----------	--------	-----------	-------	------

Module Properties

Thermal Properties

Storage temperature	T_{stg}		-40...+125	°C
Operation temperature under switching condition	T_{top}		-40...(T _{max} - 25)	°C

Isolation Properties

Isolation voltage	V_{isol}	DC Test Voltage* $t_p = 2\text{ s}$	6000	V
		AC Voltage $t_p = 1\text{ min}$	2500	V
Creepage distance			min. 12,7	mm
Clearance			11,89	mm
Comparative Tracking Index	CTI		> 200	

*100 % tested in production



Vincotech

Characteristic Values

Parameter	Symbol	Conditions					Value			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		

Inverter Switch

Static

Drain-source on-state resistance	$r_{DS(on)}$	18		20	25 125 150		39 52 60	50	mΩ
Gate-source threshold voltage	$V_{GS(th)}$		10	0,01	25	2,7		5,6	V
Gate to Source Leakage Current	I_{GSS}	-4/22	0		25			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	0	1200		25			10	μA
Internal gate resistance	r_g						7		Ω
Gate charge	Q_g						107		nC
Gate to source charge	Q_{GS}	18	600	20	25		22		
Gate to drain charge	Q_{GD}						41		
Short-circuit input capacitance	C_{ISS}						1337		pF
Short-circuit output capacitance	C_{OSS}	$f=1\text{MHz}$	0	800	25		76		
Reverse transfer capacitance	C_{RSS}						27		

Reverse Diode Static

Diode forward voltage	V_{SD}	0		20	25		3,2		V
-----------------------	----------	---	--	----	----	--	-----	--	---

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	$\lambda_{\text{paste}} = 3,4 \text{ W/mK}$ (PSX)					1,55		K/W
-------------------------------------	---------------	--	--	--	--	--	------	--	-----



Vincotech

Characteristic Values

Parameter	Symbol	Conditions					Value			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		

Inverter Switch

Dynamic

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
Turn-on delay time	$t_{d(on)}$	$R_{goff} = 4 \Omega$ $R_{gon} = 4 \Omega$	16/-4	700	32	25		18		ns
Rise time	t_r					125		18		
Turn-off delay time	$t_{d(off)}$					150		17		
Fall time	t_f					25		7		
Turn-on energy (per pulse)	E_{on}					125		8		
Turn-off energy (per pulse)	E_{off}					150		7		
Peak recovery current	I_{RRM}					25		57		
Reverse recovery time	t_{rr}					125		65		
Recovered charge	Q_r					150		66		
Reverse recovered energy	E_{rec}					25		9		
Peak rate of fall of recovery current	$(di_{rr}/dt)_{max}$	125		10						
		150		9						
		25		0,619		mWs				
		125		0,649						
		150		0,698						
		25		0,197		A				
		125		0,219						
		150		0,222						
		25		38		ns				
		125		37						
		150		45						
		25		19		μC				
		125		21						
		150		23						
		25		0,464		mWs				
		125		0,546						
		150		0,655						
		25		0,096		A/ μs				
		125		0,131						
		150		0,152						
		25		4997						
		125		8656						
		150		8100						

Thermistor

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
Rated resistance	R					25		22		k Ω
Deviation of R_{100}	$\Delta_{R/R}$	$R_{100} = 1484 \Omega$				100	-5		5	%
Power dissipation	P					25		5		mW
Power dissipation constant						25		1,5		mW/K
B-value	$B_{(25/50)}$	Tol. $\pm 1 \%$				25		3962		K
B-value	$B_{(25/100)}$	Tol. $\pm 1 \%$				25		4000		K
Vincotech NTC Reference									I	

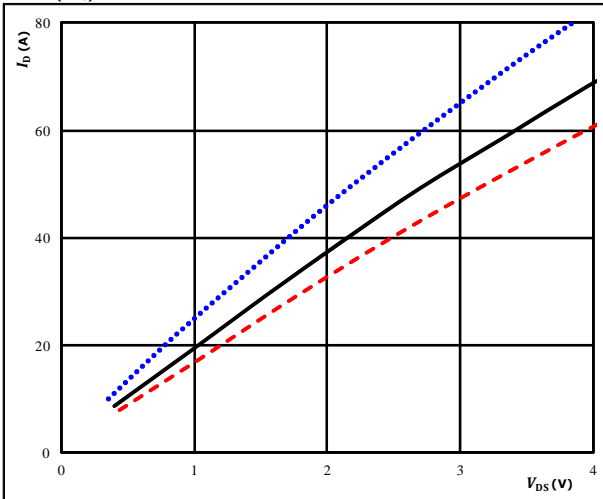


Inverter Switch Characteristics

figure 1. MOSFET

Typical output characteristics

$$I_D = f(V_{DS})$$

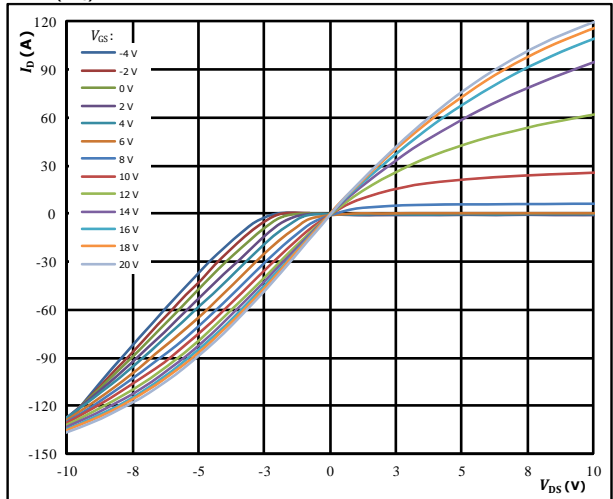


$t_p = 250 \mu s$
 $V_{GS} = 18 V$
 $T_j: 25 \text{ }^\circ C$ (dotted blue)
 $125 \text{ }^\circ C$ (solid black)
 $150 \text{ }^\circ C$ (dashed red)

figure 2. MOSFET

Typical output characteristics

$$I_D = f(V_{DS})$$

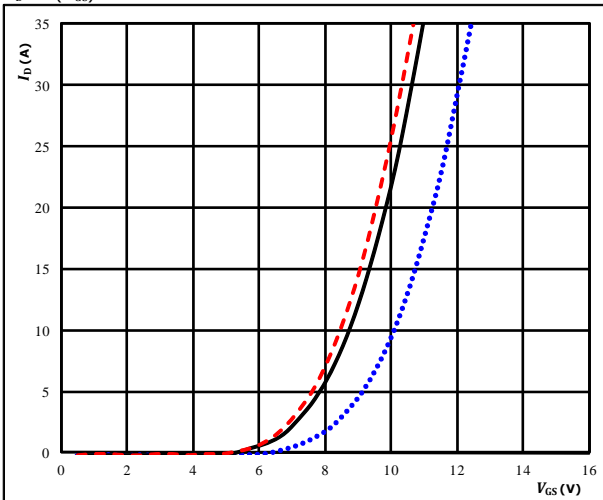


$t_p = 250 \mu s$
 $T_j = 150 \text{ }^\circ C$
 V_{GS} from -4 V to 20 V in steps of 2 V

figure 3. MOSFET

Typical transfer characteristics

$$I_D = f(V_{GS})$$

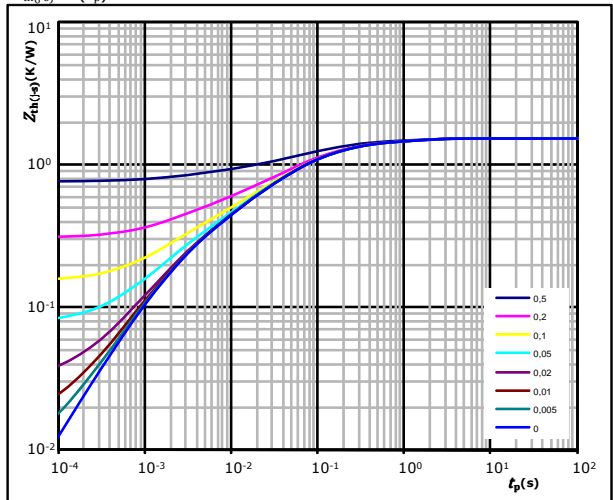


$t_p = 100 \mu s$
 $V_{DS} = 10 V$
 $T_j: 25 \text{ }^\circ C$ (dotted blue)
 $125 \text{ }^\circ C$ (solid black)
 $150 \text{ }^\circ C$ (dashed red)

figure 4. MOSFET

Transient thermal impedance as a function of pulse width

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



$D = t_p / T$
 $R_{th(j-s)} = 1,55 \text{ K/W}$
MOSFET thermal model values

R (K/W)	τ (s)
1,78E-01	1,04E+00
4,55E-01	1,44E-01
5,31E-01	4,34E-02
2,36E-01	8,88E-03
1,48E-01	1,76E-03

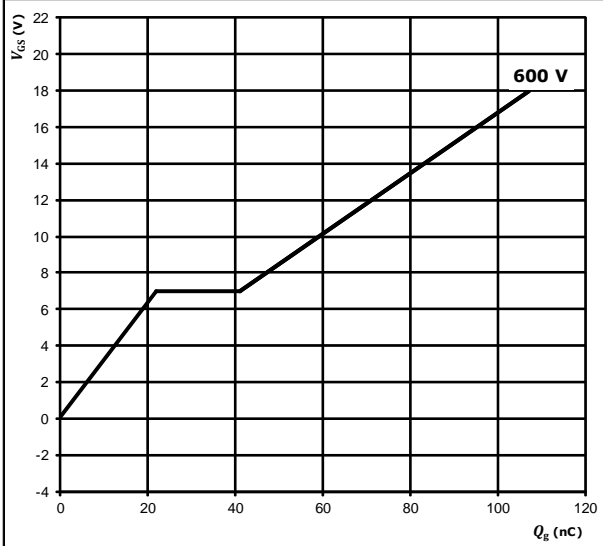


Inverter Switch Characteristics

figure 5. MOSFET

Gate voltage vs Gate charge

$$V_{GS} = f(Q_g)$$



At

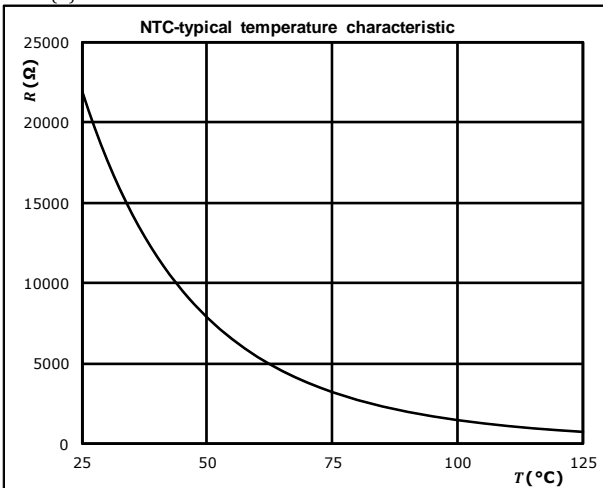
I_C = 20 A

Thermistor Characteristics

figure 1. Thermistor

Typical NTC characteristic as a function of temperature

$$R = f(T)$$





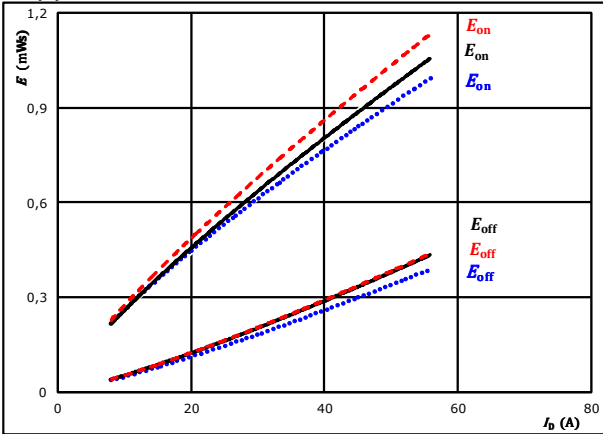
Vincotech

Inverter Switching Characteristics

figure 1. MOSFET

Typical switching energy losses as a function of drain current

$$E = f(I_D)$$



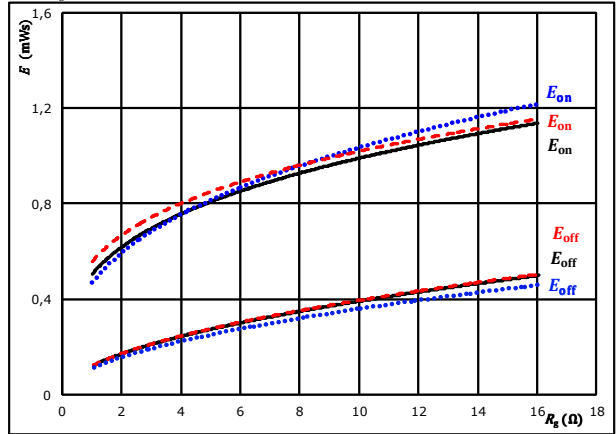
With an inductive load at
 $V_{DS} = 700$ V
 $V_{GS} = 16/-4$ V
 $R_{gon} = 4$ Ω
 $R_{goff} = 4$ Ω

T_j : 25 °C (dotted blue), 125 °C (solid black), 150 °C (dashed red)

figure 2. MOSFET

Typical switching energy losses as a function of gate resistor

$$E = f(R_g)$$



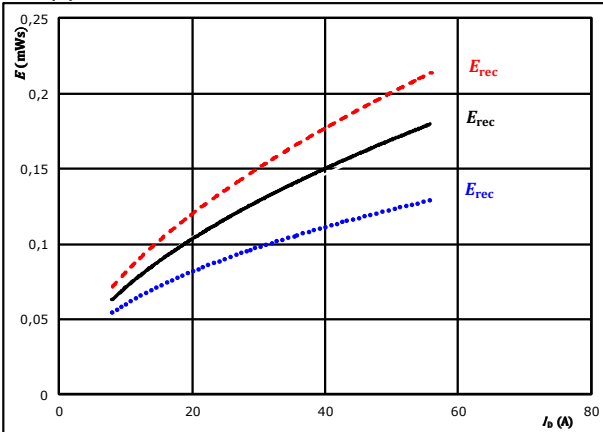
With an inductive load at
 $V_{DS} = 700$ V
 $V_{GS} = 16/-4$ V
 $I_D = 32$ A

T_j : 25 °C (dotted blue), 125 °C (solid black), 150 °C (dashed red)

figure 3. FWD

Typical reverse recovered energy loss as a function of drain current

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



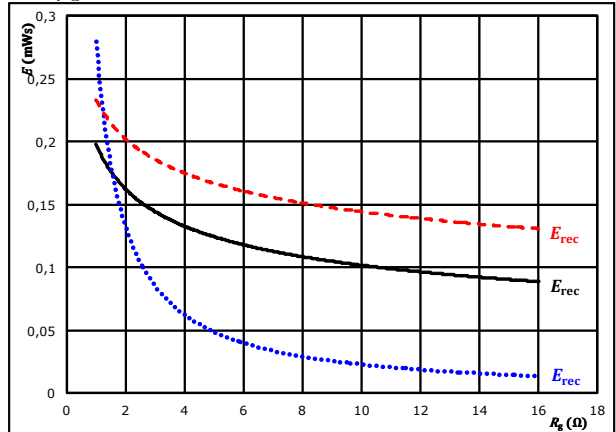
With an inductive load at
 $V_{DS} = 700$ V
 $V_{GS} = 16/-4$ V
 $R_{gon} = 4$ Ω

T_j : 25 °C (dotted blue), 125 °C (solid black), 150 °C (dashed red)

figure 4. FWD

Typical reverse recovered energy loss as a function of gate resistor

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



With an inductive load at
 $V_{DS} = 700$ V
 $V_{GS} = 16/-4$ V
 $I_D = 32$ A

T_j : 25 °C (dotted blue), 125 °C (solid black), 150 °C (dashed red)



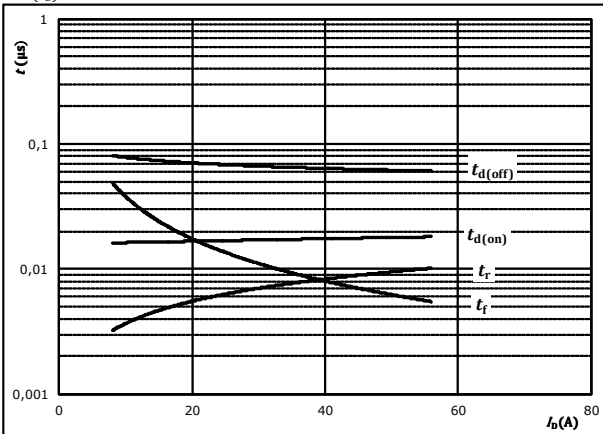
Vincotech

Inverter Switching Characteristics

figure 5. MOSFET

Typical switching times as a function of drain current

$$t = f(I_D)$$



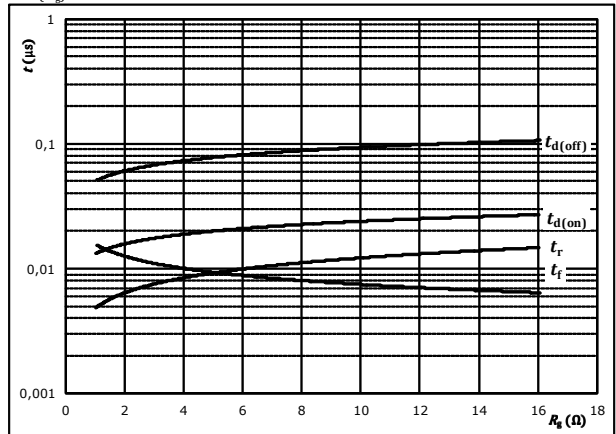
With an inductive load at

$T_J = 150 \text{ } ^\circ\text{C}$
 $V_{DS} = 700 \text{ V}$
 $V_{GS} = 16/-4 \text{ V}$
 $R_{gon} = 4 \text{ } \Omega$
 $R_{goff} = 4 \text{ } \Omega$

figure 6. MOSFET

Typical switching times as a function of gate resistor

$$t = f(R_g)$$



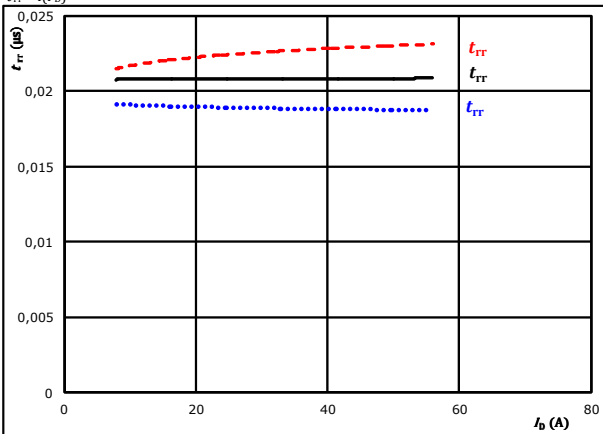
With an inductive load at

$T_J = 150 \text{ } ^\circ\text{C}$
 $V_{DS} = 700 \text{ V}$
 $V_{GS} = 16/-4 \text{ V}$
 $I_D = 32 \text{ A}$

figure 7. FWD

Typical reverse recovery time as a function of drain current

$$t_{rr} = f(I_D)$$

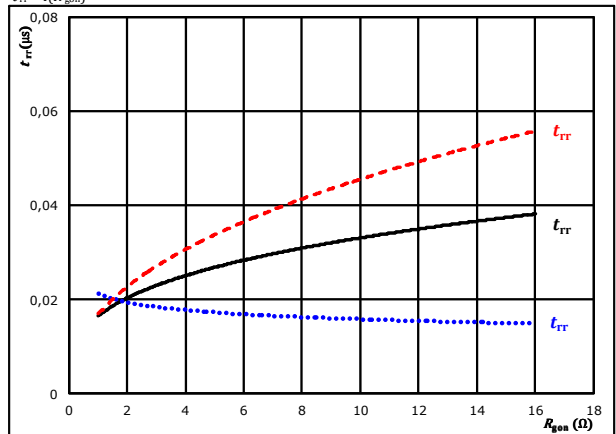


At $V_{DS} = 700 \text{ V}$
 $V_{GS} = 16/-4 \text{ V}$
 $R_{gon} = 4 \text{ } \Omega$
 $T_J: 25 \text{ } ^\circ\text{C}$ (dotted blue line)
 $125 \text{ } ^\circ\text{C}$ (solid black line)
 $150 \text{ } ^\circ\text{C}$ (dashed red line)

figure 8. FWD

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

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



At $V_{DS} = 700 \text{ V}$
 $V_{GS} = 16/-4 \text{ V}$
 $I_D = 32 \text{ A}$
 $T_J: 25 \text{ } ^\circ\text{C}$ (dotted blue line)
 $125 \text{ } ^\circ\text{C}$ (solid black line)
 $150 \text{ } ^\circ\text{C}$ (dashed red line)

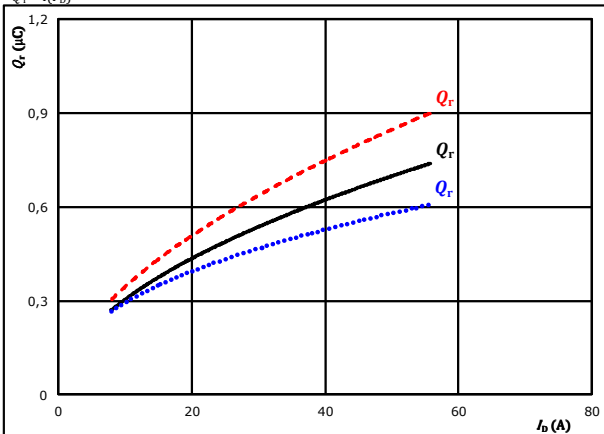


Inverter Switching Characteristics

figure 9. FWD

Typical recovered charge as a function of drain current

$$Q_r = f(I_D)$$

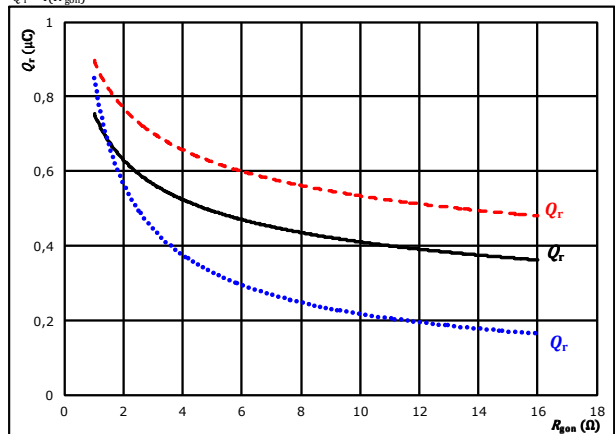


At $V_{DS} = 700$ V $T_j: 25$ °C
 $V_{GS} = 16/-4$ V $T_j: 125$ °C ———
 $R_{gon} = 4$ Ω $T_j: 150$ °C - - - - -

figure 10. FWD

Typical recovered charge as a function of MOSFET turn on gate resistor

$$Q_r = f(R_{gon})$$

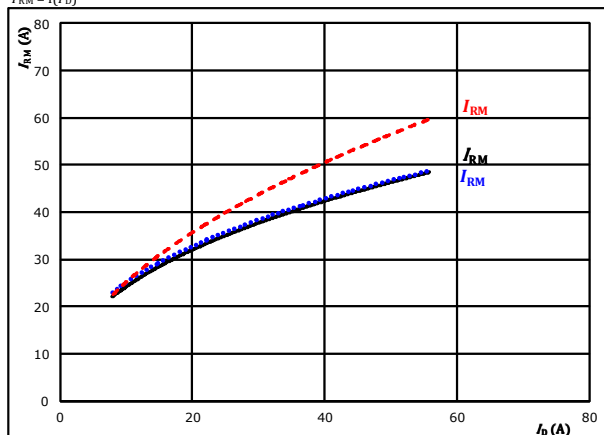


At $V_{DS} = 700$ V $T_j: 25$ °C
 $V_{GS} = 16/-4$ V $T_j: 125$ °C ———
 $I_D = 32$ A $T_j: 150$ °C - - - - -

figure 11. FWD

Typical peak reverse recovery current as a function of drain current

$$I_{RM} = f(I_D)$$

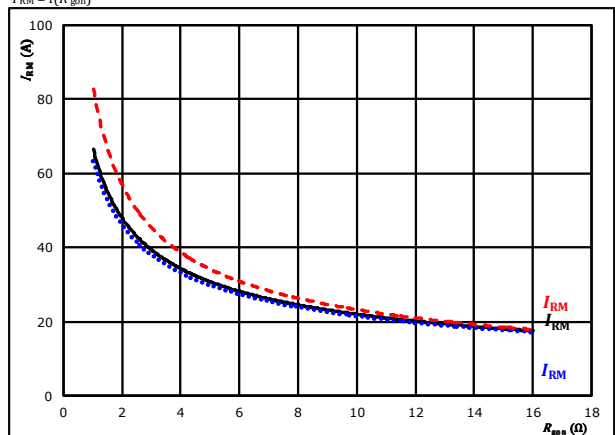


At $V_{DS} = 700$ V $T_j: 25$ °C
 $V_{GS} = 16/-4$ V $T_j: 125$ °C ———
 $R_{gon} = 4$ Ω $T_j: 150$ °C - - - - -

figure 12. FWD

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

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



At $V_{DS} = 700$ V $T_j: 25$ °C
 $V_{GS} = 16/-4$ V $T_j: 125$ °C ———
 $I_D = 32$ A $T_j: 150$ °C - - - - -

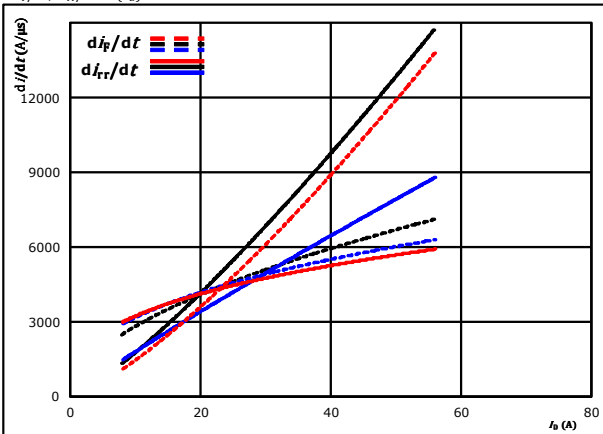


Vincotech

Switching Characteristics

figure 13. FWD

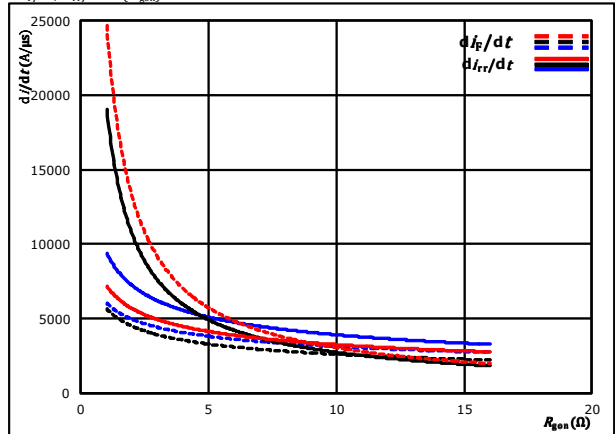
Typical rate of fall of forward and reverse recovery current as a function of drain current
 $di_f/dt, di_{rr}/dt = f(I_D)$



At $V_{DS} = 700$ V
 $V_{GS} = 16/-4$ V
 $R_{gon} = 4$ Ω
 $T_j: 25$ °C
 125 °C
 150 °C

figure 14. FWD

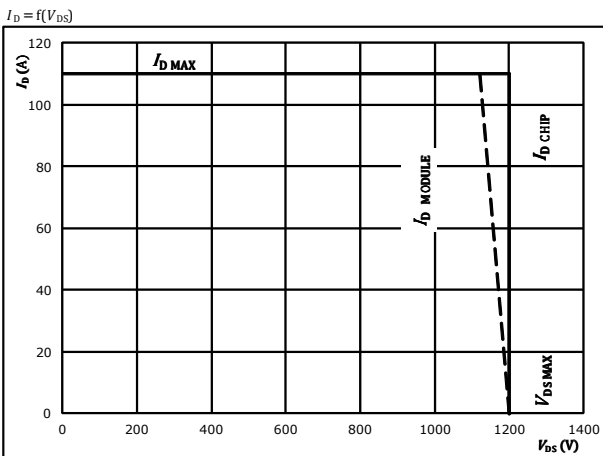
Typical rate of fall of forward and reverse recovery current as a function of MOSFET turn on gate resistor
 $di_f/dt, di_{rr}/dt = f(R_{gon})$



At $V_{DS} = 700$ V
 $V_{GS} = 16/-4$ V
 $I_D = 32$ A
 $T_j: 25$ °C
 125 °C
 150 °C

figure 15. MOSFET

Reverse bias safe operating area



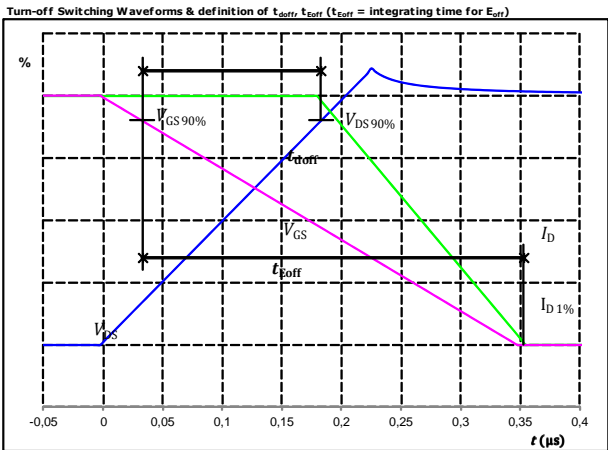
At $T_j = 125$ °C
 $R_{gon} = 4$ Ω
 $R_{goff} = 4$ Ω



Inverter Switching Definitions

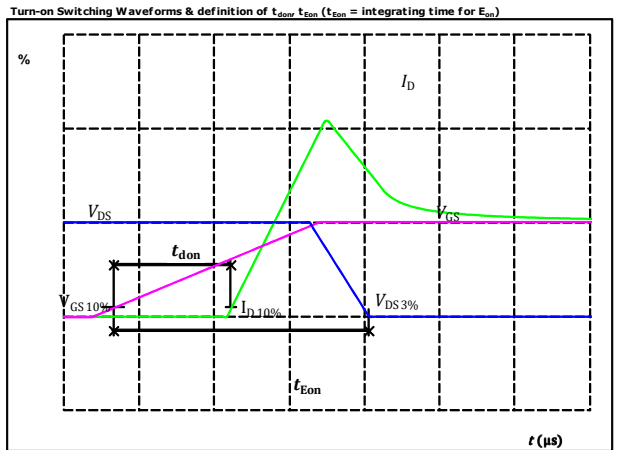
General conditions		
T_j	=	125 °C
R_{gon}	=	4 Ω
R_{goff}	=	4 Ω

figure 1. MOSFET



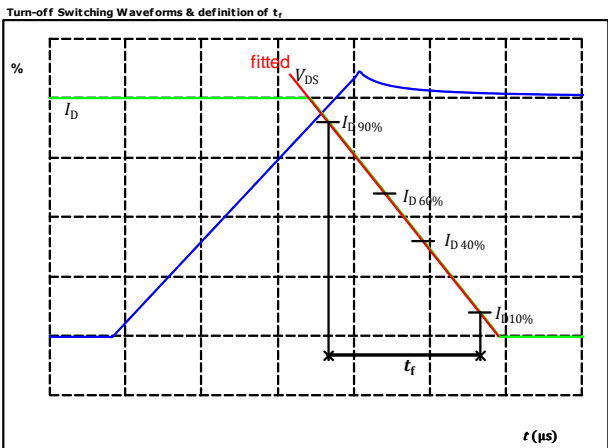
$V_{GS}(0\%) =$	-6	V
$V_{GS}(100\%) =$	16	V
$V_{DS}(100\%) =$	700	V
$I_D(100\%) =$	32	A
$t_{doff} =$	0,065	μs

figure 2. MOSFET



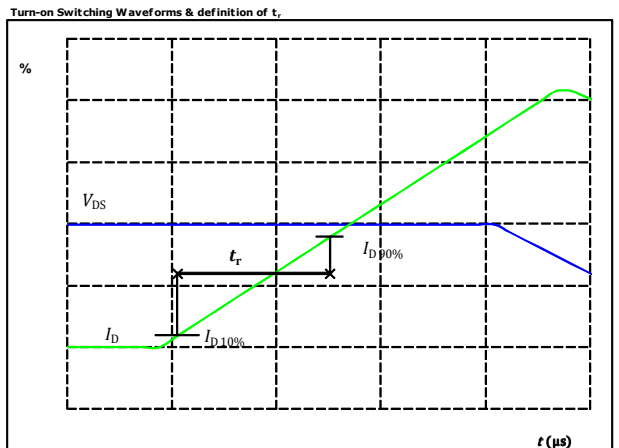
$V_{GS}(0\%) =$	-6	V
$V_{GS}(100\%) =$	16	V
$V_{DS}(100\%) =$	700	V
$I_D(100\%) =$	32	A
$t_{don} =$	0,018	μs

figure 3. MOSFET



$V_{DS}(100\%) =$	700	V
$I_D(100\%) =$	32	A
$t_f =$	0,010	μs

figure 4. MOSFET

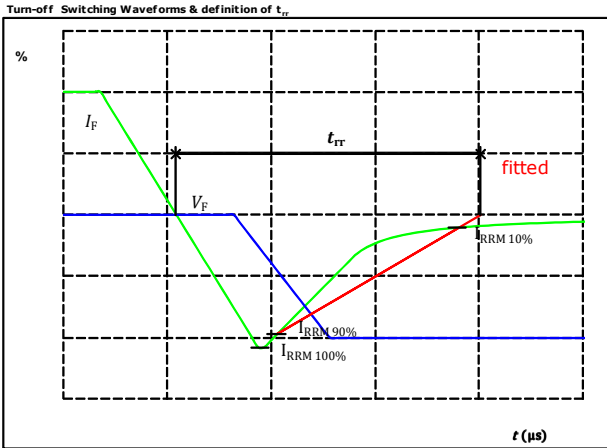


$V_{DS}(100\%) =$	700	V
$I_D(100\%) =$	32	A
$t_r =$	0,008	μs



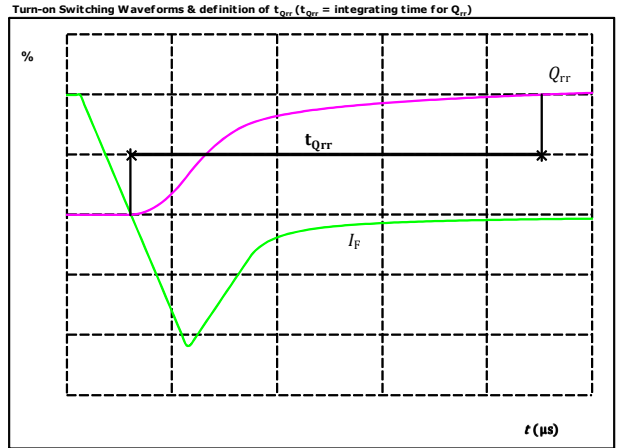
Inverter Switching Definitions

figure 7. FWD



$V_F(100\%) =$	700	V
$I_F(100\%) =$	32	A
$I_{RRM}(100\%) =$	37	A
$t_{rr} =$	0,021	μs

figure 8. FWD



$I_F(100\%) =$	32	A
$Q_{rr}(100\%) =$	0,55	μC



Vincotech

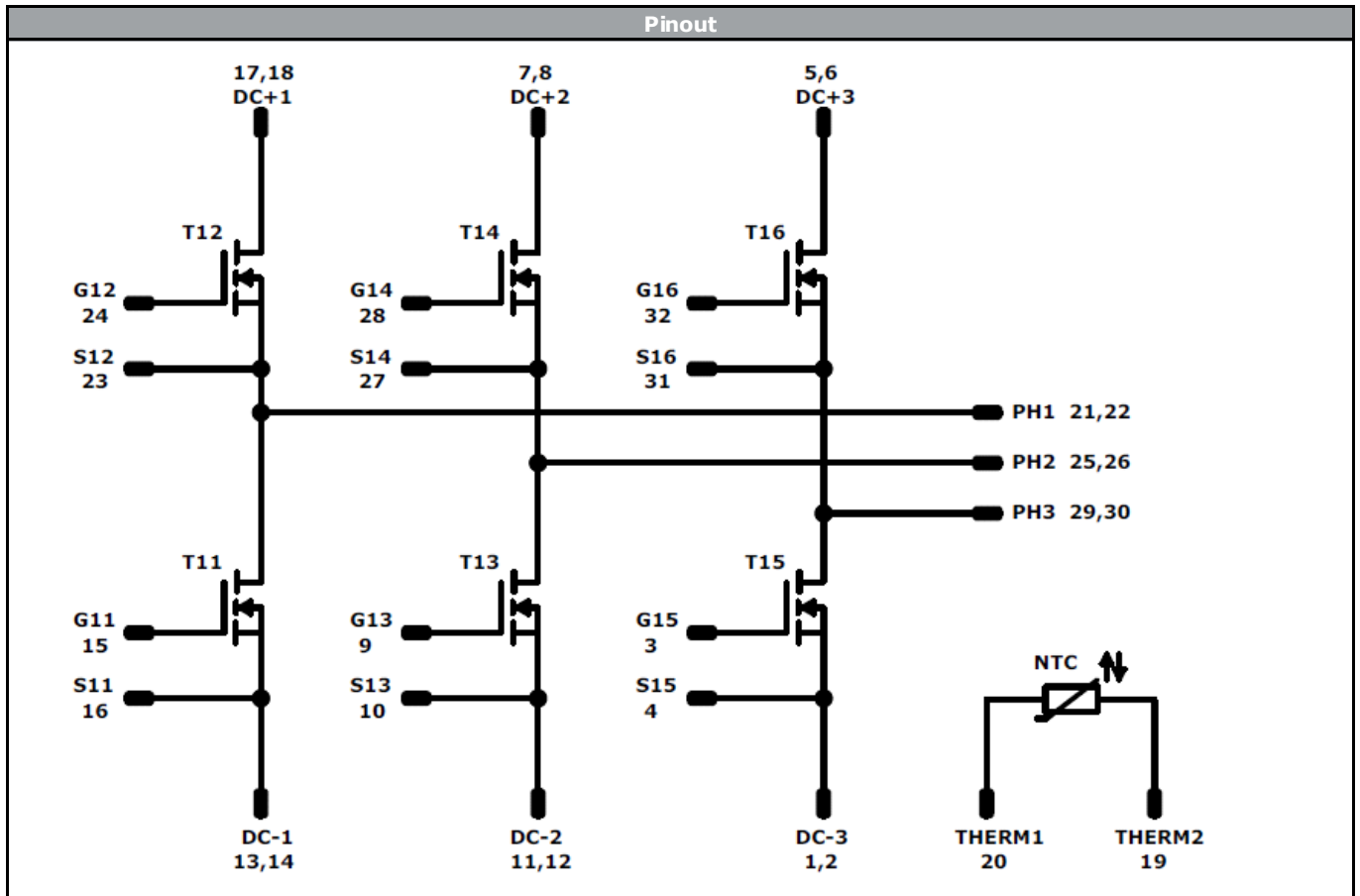
Ordering Code & Marking									
Version			Ordering Code						
without thermal paste 12 mm housing with press-fit pins			10-PY126PA040MR-L226F28Y						
with thermal paste 12 mm housing with press-fit pins			10-PY126PA040MR-L226F28Y-/3/						
NN-NNNNNNNNNNNN TTTTUV WWYY UL VIN LLLL SSSS			Text	Name	Date code	UL & VIN	Lot	Serial	
			Datamatrix		NN-NNNNNNNNNNNN-TTTTUV	WWYY	UL VIN	LLLL	SSSS
				Type&Ver	Lot number	Serial	Date code		
			TTTTUV	LLLL	SSSS	WWYY			

Pin table			
Pin	X	Y	Functions
1	52,2	2,7	DC-3
2	52,2	0	DC-3
3	45,5	12	G15
4	42,5	13	S15
5	41,2	0	DC+3
6	38,5	0	DC+3
7	33,1	0	DC+2
8	30,4	0	DC+2
9	25	10	G13
10	22	11	S13
11	19,4	0	DC-2
12	16,7	0	DC-2
13	13,7	0	DC-1
14	11	0	DC-1
15	8,7	12	G11
16	5,7	13	S11
17	0	0	DC+1
18	0	2,7	DC+1
19	14,3	15,6	THERM2
20	16,1	12,6	THERM1
21	0	28,2	PH1
22	2,7	28,2	PH1
23	5,7	26,7	S12
24	8,7	25,7	G12
25	19,4	28,2	PH2
26	22,1	28,2	PH2
27	23,1	25,2	S14
28	26,1	24,2	G14
29	36,3	28,2	PH3
30	39	28,2	PH3
31	42	26,7	S16
32	45	25,7	G16

Tolerance of pinpositions: ±0,5mm at the end of pins
Dimension of coordinate axis is only offset without tolerance



Vincotech



Identification					
ID	Component	Voltage	Current	Function	Comment
T11, T12, T13, T14, T15, T16	MOSFET	1200 V	40 mΩ	Inverter Switch	
NTC	Thermistor			Thermistor	




Vincotech

Packaging instruction			
Standard packaging quantity (SPQ) 100	>SPQ	Standard	<SPQ Sample

Handling instruction
Handling instructions for <i>flow 1</i> packages see vincotech.com website.

Package data
Package data for <i>flow 1</i> 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
10-PY126PA040MR-L226F28Y-D2-14	07 Aug. 2018	Product features has been updated	1

DISCLAIMER

The information, specifications, procedures, methods and recommendations herein (together "information") are presented by Vincotech to reader in good faith, are believed to be accurate and reliable, but may well be incomplete and/or not applicable to all conditions or situations that may exist or occur. Vincotech reserves the right to make any changes without further notice to any products to improve reliability, function or design. No representation, guarantee or warranty is made to reader as to the accuracy, reliability or completeness of said information or that the application or use of any of the same will avoid hazards, accidents, losses, damages or injury of any kind to persons or property or that the same will not infringe third parties rights or give desired results. It is reader's sole responsibility to test and determine the suitability of the information and the product for reader's intended use.

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\(威科\)](#)