



Vincotech

10-EY232PB008ME01-PN97F08T

datasheet

flowDUAL E2 SiC

2300 V / 8 mΩ

Topology features

- Half Bridge
- Temperature sensor

Component features

- Fast intrinsic diode with low reverse recovery
- High blocking voltage with low on-resistance
- High speed switching with low capacitance

Housing features

- Base isolation: AlN
- Convex shaped substrate for superior thermal contact
- Compact housing
- CTI600 housing material
- Thermo-mechanical push-and-pull force relief
- Press-fit pin
- Reliable cold welding connection

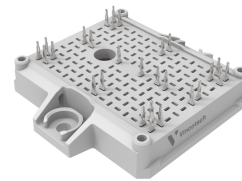
Target applications

- Charging Stations
- Energy Storage Systems
- General
- Industrial Drives
- Power Supply
- UPS
- Welding & Cutting

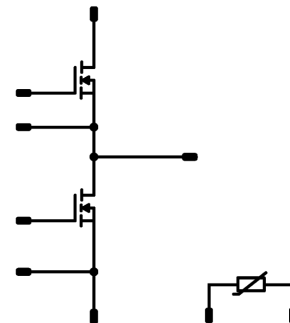
Types

- 10-EY232PB008ME01-PN97F08T

flow E2 12 mm housing



Schematic





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Maximum Ratings

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

Parameter	Symbol	Conditions	Value	Unit
Inverter Switch				
Drain-source voltage	V_{DS}		2300	V
Drain current (DC current)	I_D	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	157	A
Peak drain current	I_{DM}	t_p limited by T_{jmax}	664	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	499	W
Gate-source voltage	V_{GS}	static	-4 / 15	V
		dynamic	-8 / 19	V
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* $t_p = 2\text{ s}$	6800	V
Creepage distance			>12,7	mm
Clearance			9,05	mm
Comparative Tracking Index	CTI		≥ 600	

*100 % tested in production



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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	

Inverter Switch

Static

Drain-source on-state resistance	$r_{DS(on)}$		15		276	25 125 150		8,2 16 19,1	9,75 ⁽¹⁾	mΩ
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$			0,076	25	1,8	2,5	3,6	V
Gate to Source Leakage Current	I_{GSS}		15	0		25		40	400	nA
Zero Gate Voltage Drain Current	I_{DSS}		0	2300		25		4	40	μA
Internal gate resistance	r_g							2,5		Ω
Gate charge	Q_g		-4/15	1500	276	25		588		nC
Short-circuit input capacitance	C_{iss}	$f = 100$ kHz	0	1500	0	25		24000		pF
Short-circuit output capacitance	C_{oss}							408		
Reverse transfer capacitance	C_{rss}							40		
Diode forward voltage	V_{SD}		0		140	25		5,5		V

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{paste} = 5,2$ W/mK (PTM)						0,19		K/W
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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					
Dynamic														
Turn-on delay time	$t_{d(on)}$	$R_{gon} = 0,5 \Omega$ $R_{goff} = 0,5 \Omega$	-4/15	1200	280	25		35,97		ns				
						125		34,48						
						150		33,82						
Rise time	t_r									25		21,77		ns
										125		19,48		
										150		19,52		
Turn-off delay time	$t_{d(off)}$									25		156,65		ns
										125		176,53		
										150		182,09		
Fall time	t_f									25		15,36		ns
										125		16,37		
										150		16,79		
Turn-on energy (per pulse)	E_{on}	$Q_{rFWD}=2,12 \mu C$ $Q_{rFWD}=4,3 \mu C$ $Q_{rFWD}=7,18 \mu C$				25		9,02		mWs				
						125		9,44						
						150		10,38						
Turn-off energy (per pulse)	E_{off}					25		6,85		mWs				
						125		7,52						
						150		7,54						
Peak recovery current	I_{RRM}	$di/dt=18768 A/\mu s$ $di/dt=18860 A/\mu s$ $di/dt=13994 A/\mu s$				25		167,6		A				
							125		196,98					
							150		228,86					
Reverse recovery time	t_{rr}						25		23,53		ns			
							125		38,21					
							150		58,66					
Recovered charge	Q_r						25		2,12		μC			
							125		4,3					
							150		7,18					
Reverse recovered energy	E_{rec}						25		0,958		mWs			
							125		2,82					
							150		5,49					
Peak rate of fall of recovery current	$(di_{rr}/dt)_{max}$					25		20574,15		A/ μs				
						125		10337,73						
						150		7163,49						



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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	

Thermistor

Static

Rated resistance	R					25		5		kΩ
Deviation of R100	$\Delta_{R/R}$	$R_{100} = 499 \Omega$				100	3,2		3,3	%
Power dissipation	P					25		130		mW
Power dissipation constant	d					25		1,3		mW/K
B-value	$B_{(25/50)}$	Tol. $\pm 1 \%$						3380		K
Vincotech Thermistor Reference									V	

⁽¹⁾ Value at chip level

⁽²⁾ Only valid with pre-applied Vincotech thermal interface material.



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Inverter Switch Characteristics

figure 1. MOSFET

Typical output characteristics

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

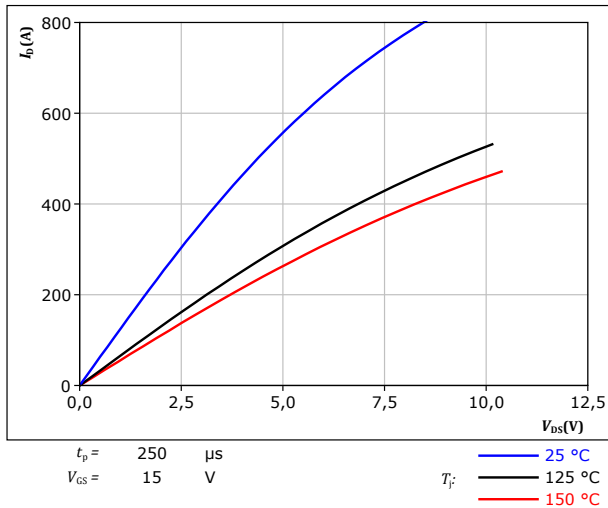


figure 2. MOSFET

Typical output characteristics

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

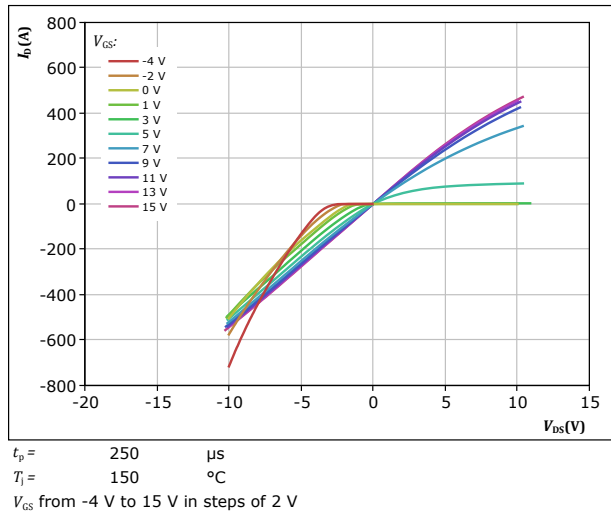


figure 3. MOSFET

Typical transfer characteristics

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

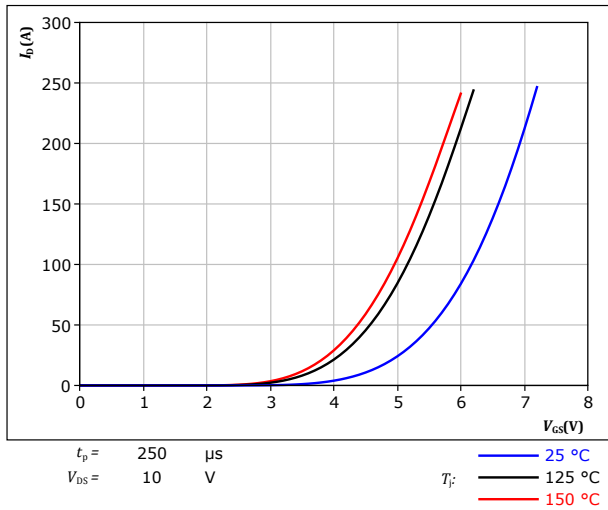
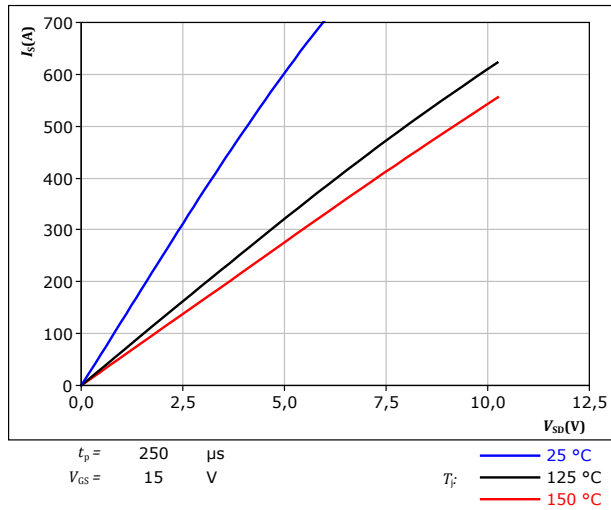


figure 4. MOSFET

Typical reverse drain current characteristics

$$I_{SD} = f(V_{SD})$$





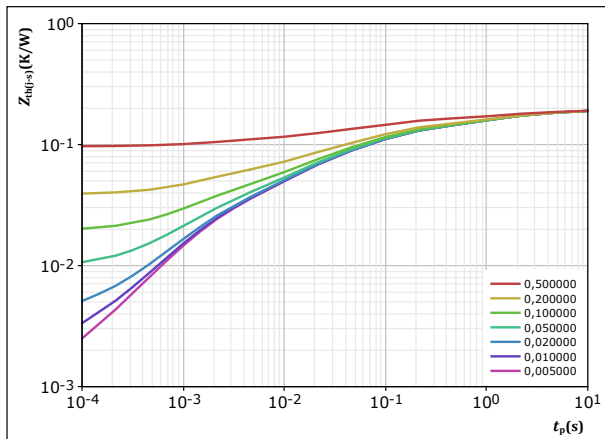
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Inverter Switch Characteristics

figure 5. MOSFET

Transient thermal impedance as a function of pulse width

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



$$D = t_p / T$$

$$R_{th(j-a)} = 0,19 \text{ K/W}$$

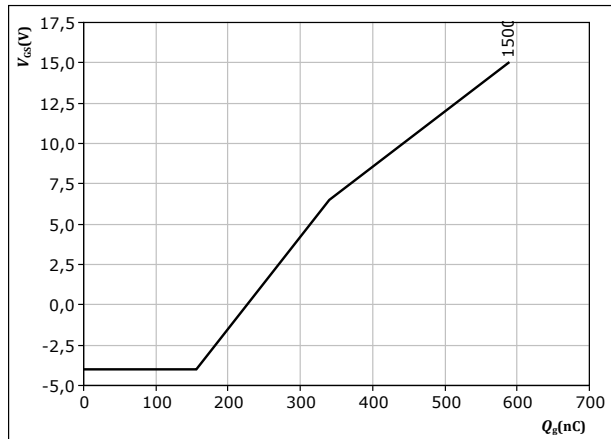
MOSFET thermal model values

R (K/W)	τ (s)
2,58E-02	4,66E+00
4,25E-02	8,61E-01
6,53E-02	7,99E-02
3,83E-02	1,32E-02
2,11E-02	1,44E-03

figure 6. MOSFET

Gate voltage vs gate charge

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



$$I_D = 200 \text{ A}$$

$$T_j = 25 \text{ }^{\circ}\text{C}$$



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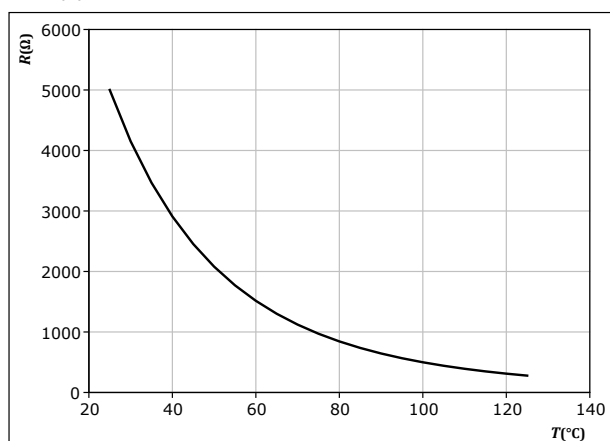
Thermistor Characteristics

figure 7.

Thermistor

Typical NTC characteristic as function of temperature

$$R_T = f(T)$$





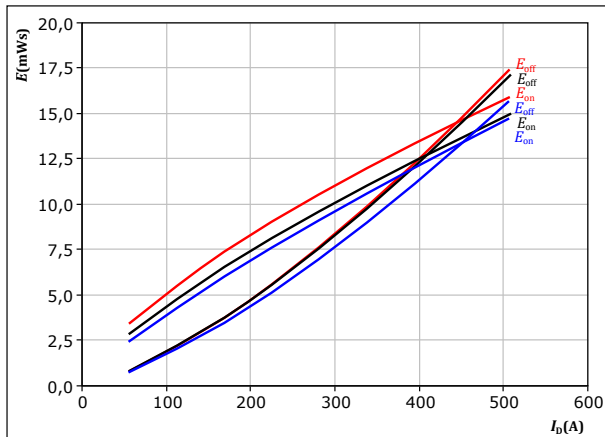
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Inverter Switching Characteristics

figure 8. MOSFET

Typical switching energy losses as a function of drain current

$$E = f(I_D)$$



With an inductive load at

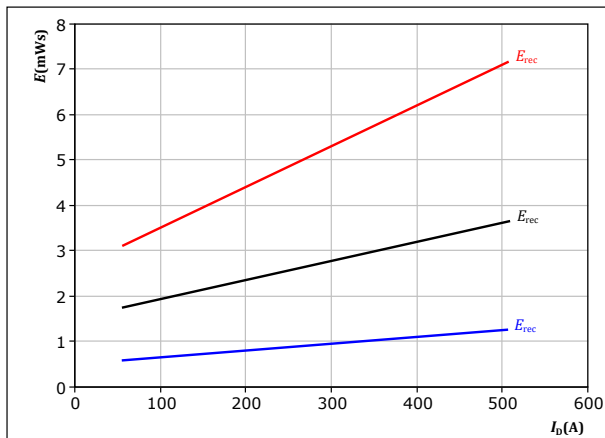
$V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $R_{gon} = 0,5$ Ω
 $R_{goff} = 0,5$ Ω

T_j :
— 25 °C
— 125 °C
— 150 °C

figure 10. MOSFET

Typical reverse recovered energy loss as a function of drain current

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



With an inductive load at

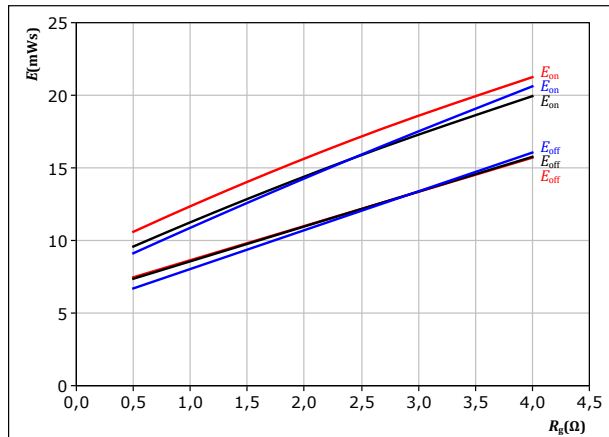
$V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $R_{gon} = 0,5$ Ω

T_j :
— 25 °C
— 125 °C
— 150 °C

figure 9. MOSFET

Typical switching energy losses as a function of MOSFET turn on gate resistor

$$E = f(R_g)$$



With an inductive load at

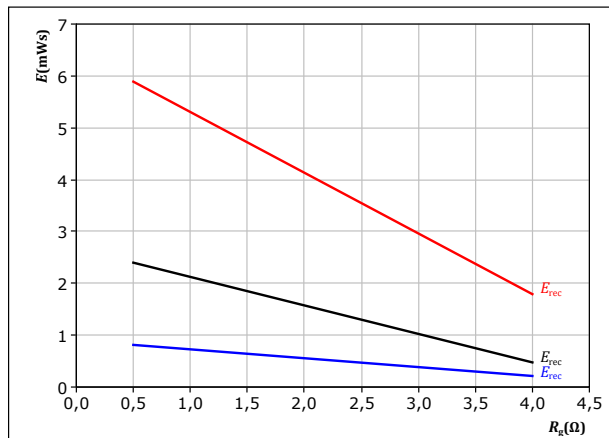
$V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $I_D = 280$ A

T_j :
— 25 °C
— 125 °C
— 150 °C

figure 11. MOSFET

Typical reverse recovered energy loss as a function of MOSFET turn on gate resistor

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



With an inductive load at

$V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $I_D = 280$ A

T_j :
— 25 °C
— 125 °C
— 150 °C



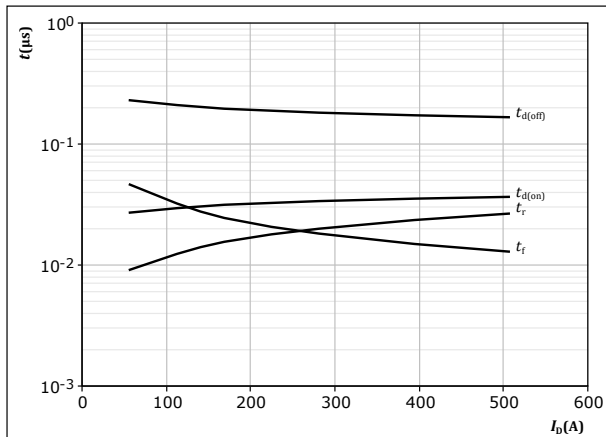
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Inverter Switching Characteristics

figure 12. MOSFET

Typical switching times as a function of drain current
 $t = f(I_D)$

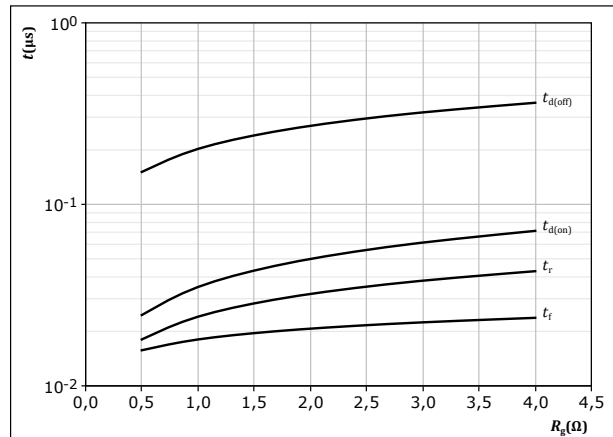


With an inductive load at

$T_j = 150$ °C
 $V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $R_{gon} = 0,5$ Ω
 $R_{goff} = 0,5$ Ω

figure 13. MOSFET

Typical switching times as a function of MOSFET turn on gate resistor
 $t = f(R_g)$

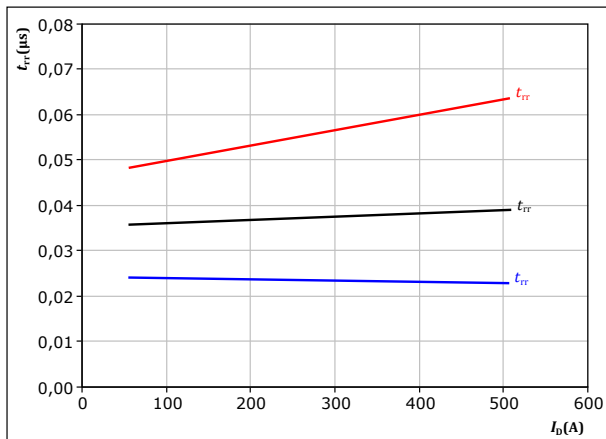


With an inductive load at

$T_j = 150$ °C
 $V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $I_D = 280$ A

figure 14. MOSFET

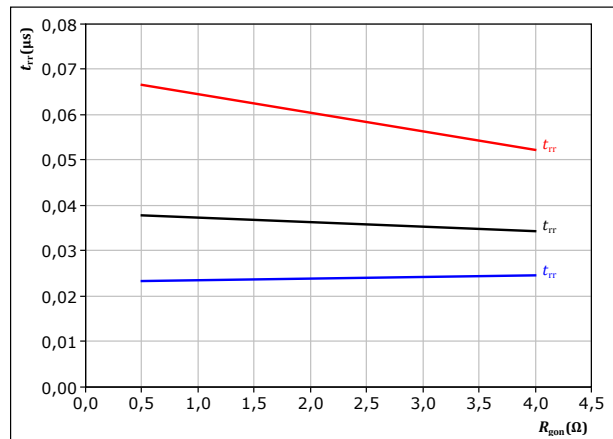
Typical reverse recovery time as a function of drain current
 $t_{rr} = f(I_D)$



At $V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $R_{gon} = 0,5$ Ω
 $T_j: 25$ °C (blue)
 125 °C (black)
 150 °C (red)

figure 15. MOSFET

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



At $V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $I_D = 280$ A
 $T_j: 25$ °C (blue)
 125 °C (black)
 150 °C (red)



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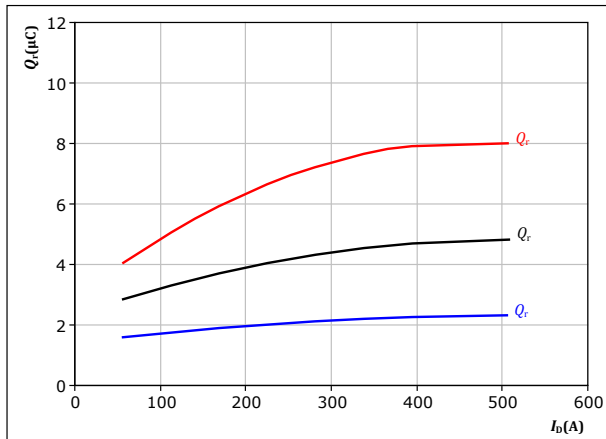
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datasheet

Inverter Switching Characteristics

figure 16. MOSFET

Typical recovered charge as a function of drain current

$$Q_r = f(I_D)$$

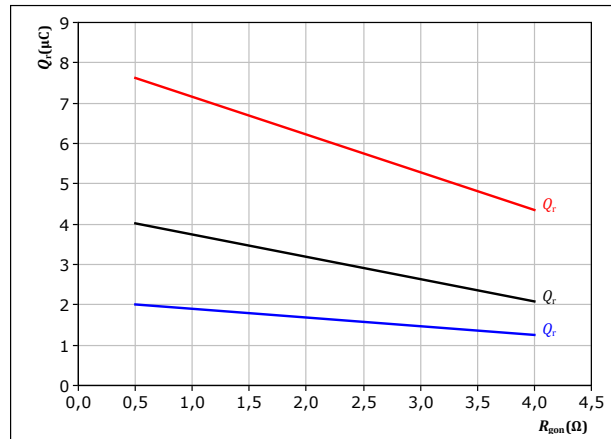


At $V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $R_{gon} = 0,5$ Ω
 T_j : 25 °C (blue), 125 °C (black), 150 °C (red)

figure 17. MOSFET

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

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

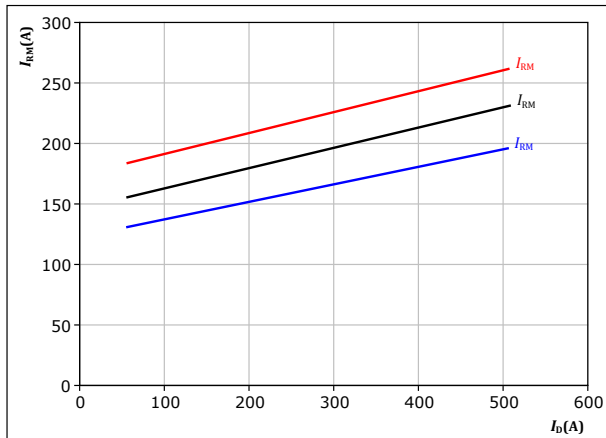


At $V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $I_D = 280$ A
 T_j : 25 °C (blue), 125 °C (black), 150 °C (red)

figure 18. MOSFET

Typical peak reverse recovery current as a function of drain current

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

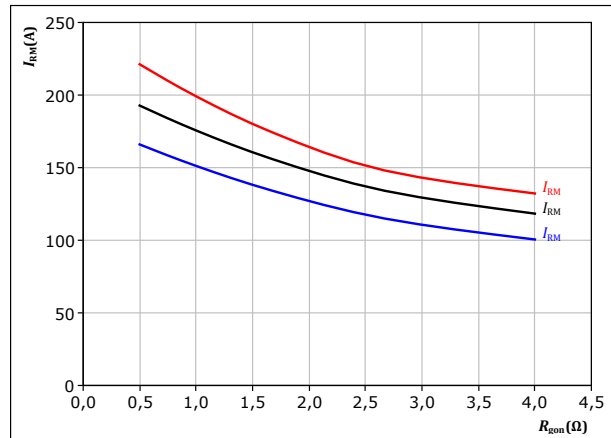


At $V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $R_{gon} = 0,5$ Ω
 T_j : 25 °C (blue), 125 °C (black), 150 °C (red)

figure 19. MOSFET

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

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



At $V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $I_D = 280$ A
 T_j : 25 °C (blue), 125 °C (black), 150 °C (red)

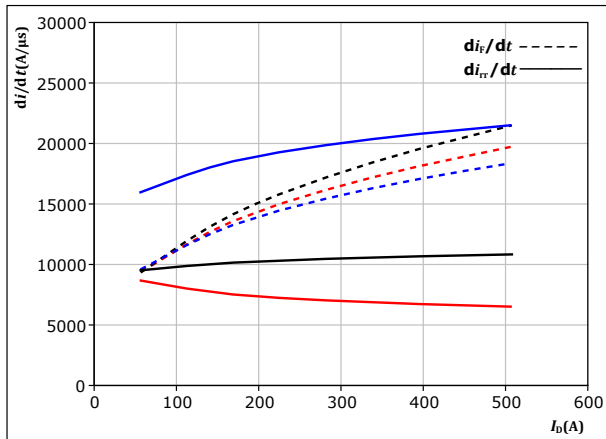


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Inverter Switching Characteristics

figure 20. MOSFET

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

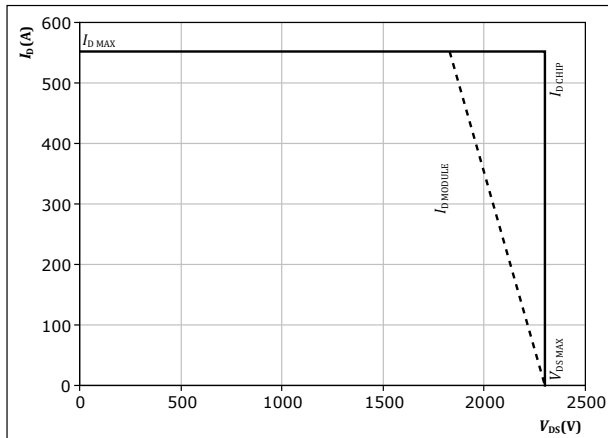


At $V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $R_{gon} = 0,5$ Ω
 $T_j = 25$ °C
 $T_j = 125$ °C
 $T_j = 150$ °C

figure 22. MOSFET

Reverse bias safe operating area

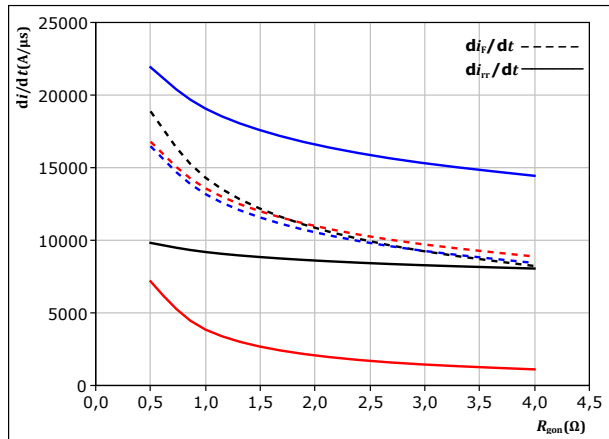
$I_D = f(V_{DS})$



At $T_j = 150$ °C
 $R_{gon} = 0,5$ Ω
 $R_{goff} = 0,5$ Ω

figure 21. MOSFET

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



At $V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $I_D = 280$ A
 $T_j = 25$ °C
 $T_j = 125$ °C
 $T_j = 150$ °C



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Inverter Switching Definitions

figure 23. MOSFET

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

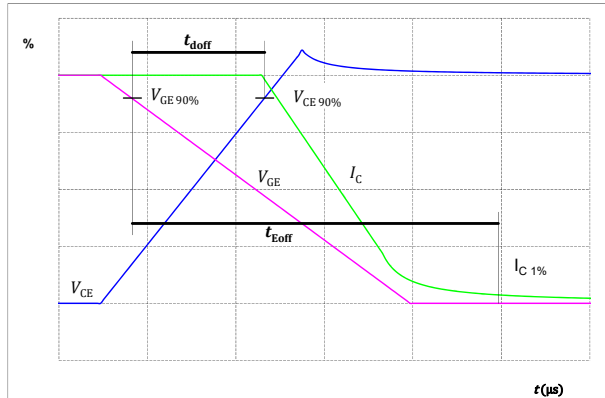


figure 24. MOSFET

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

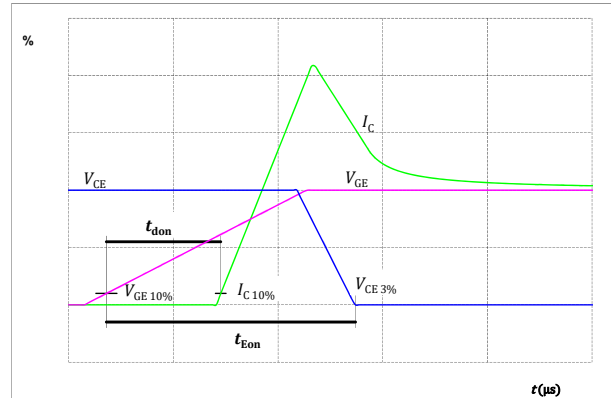


figure 25. MOSFET

Turn-off Switching Waveforms & definition of t_f

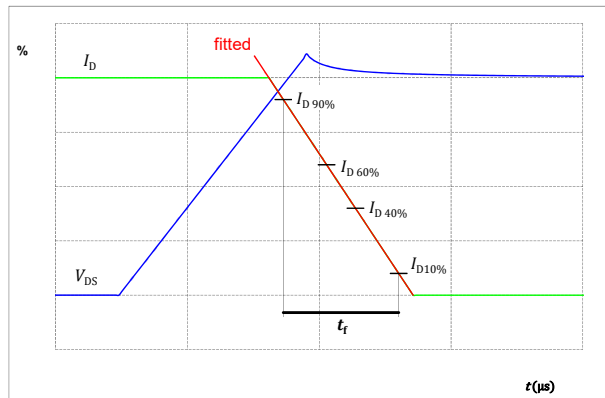
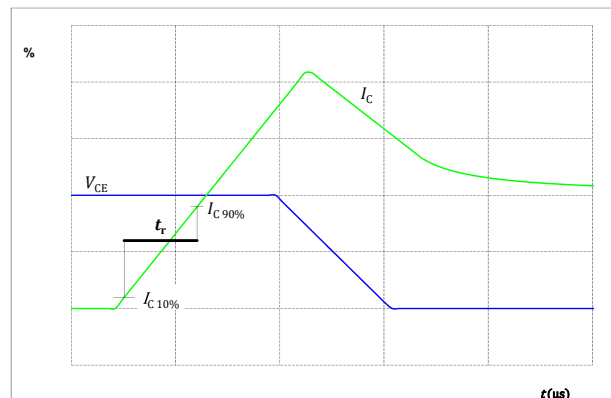


figure 26. MOSFET

Turn-on Switching Waveforms & definition of t_r





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Inverter Switching Definitions

figure 27.

FWD

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

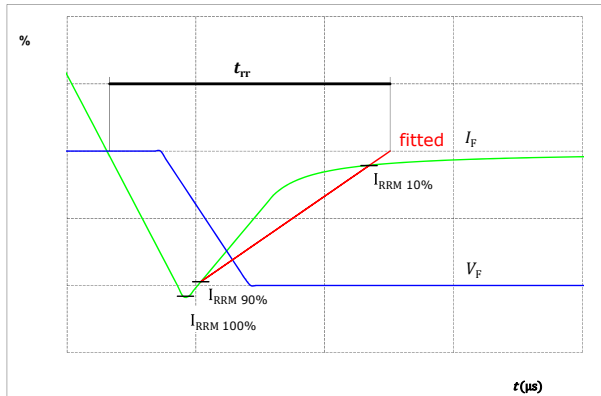


figure 28.

FWD

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

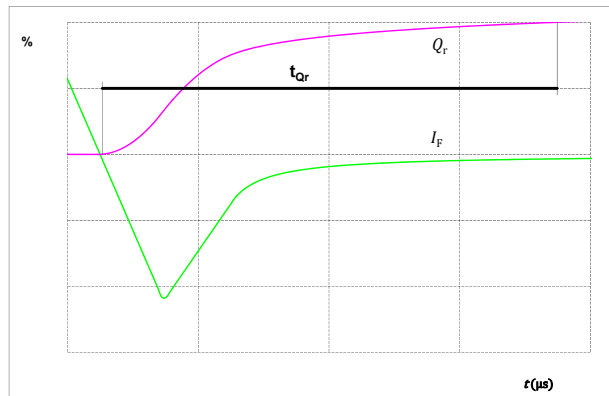
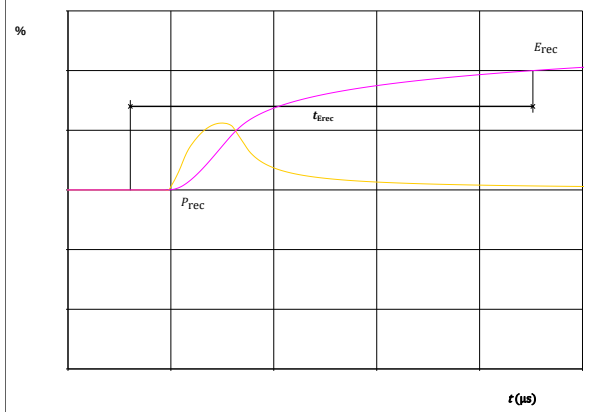


figure 29.

FWD

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





datasheet

Ordering Code	
Version	Ordering Code
Without thermal paste	10-EY232PB008ME01-PN97F08T
With thermal paste (5,2 W/mK, PTM6000HV)	10-EY232PB008ME01-PN97F08T-/7/

Marking							
	Text	Name		Date code	UL & VIN	Lot	Serial
		NN-NNNNNNNNNNNNN- TTTTTIVV		WWYY	UL VIN	LLLLL	SSSS
		Datamatrix	Type&Ver	Lot number	Serial	Date code	
TTTTTIVV			LLLLL	SSSS	WWYY		

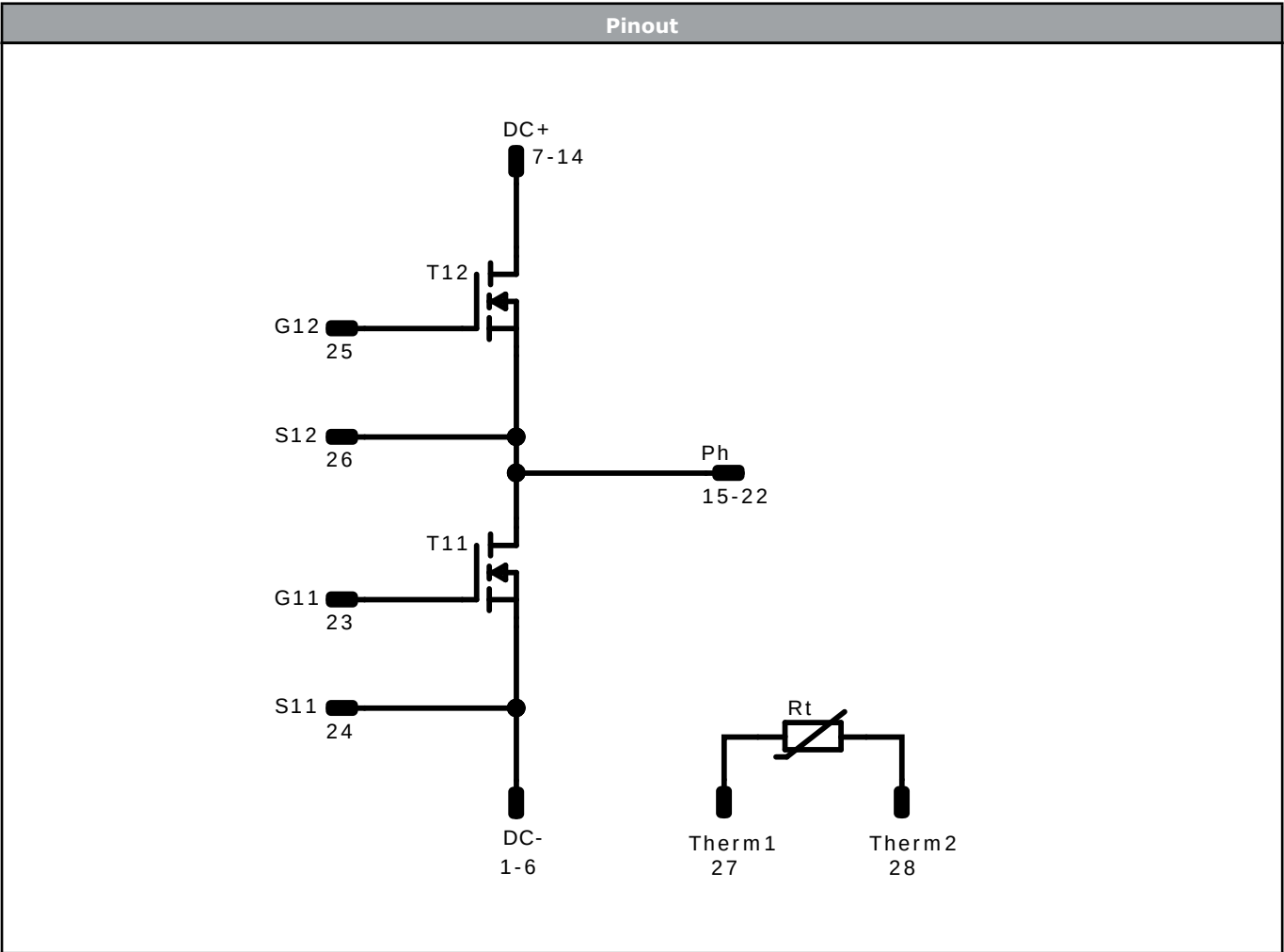
Pin table [mm]			
Pin	X	Y	Function
1	16	9,6	DC-
2	16	12,8	DC-
3	16	19,2	DC-
4	16	28,8	DC-
5	16	41,6	DC-
6	16	44,8	DC-
7	32	44,8	DC+
8	32	48	DC+
9	28,8	44,8	DC+
10	28,8	48	DC+
11	32	0	DC+
12	32	3,2	DC+
13	28,8	0	DC+
14	28,8	3,2	DC+
15	0	0	Ph
16	0	3,2	Ph
17	3,2	0	Ph
18	3,2	3,2	Ph
19	0	44,8	Ph
20	0	48	Ph
21	3,2	44,8	Ph
22	3,2	48	Ph
23	0	22,4	G11
24	3,2	22,4	S11
25	32	22,4	G12
26	28,8	22,4	S12
27	19,2	0	Therm1
28	16	0	Therm2

center of press-fit pin head
pin head type "T": PEB plated through-hole Ø1mm +0,09 / -0,06
for further PEB design rules refer to the latest handling instruction

Tolerance of pinpositions: ±0,4mm at the end of pins
Dimension of coordinate axis is only offset without tolerance



Vincotech



Identification					
ID	Component	Voltage	Current	Function	Comment
T11, T12	MOSFET	2300 V	7,5 mΩ	Inverter Switch	
Rt	Thermistor			Thermistor	



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10-EY232PB008ME01-PN97F08T
datasheet

Packaging instruction				
Standard packaging quantity (SPQ) 100	>SPQ	Standard	<SPQ	Sample
Handling instruction				
Handling instructions for <i>flow</i> E2 packages see vincotech.com website.				
Package data				
Package data for <i>flow</i> E2 packages see vincotech.com website.				
Vincotech thermistor reference				
See Vincotech thermistor reference table at vincotech.com website.				
UL recognition and file number				
This device is UL 1557 recognized under E192116 up to a junction temperature under switching condition $T_{j,sp}=175^{\circ}\text{C}$ and up to 4000VAC/1min isolation voltage. For more information see vincotech.com website.				

Document No.:	Date:	Modification:	Pages
10-EY232PB008ME01-PN97F08T-D1-14	19 May. 2025	Initial Release	
10-EY232PB008ME01-PN97F08T-D2-14	1 Jul. 2025	Introduce lower Rg to dynamic characteristic of Inverter Switch	

DISCLAIMER

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