



Vincotech

10-EY232PB005ME01-PN99F08T

datasheet

flowDUAL E2 SiC

2300 V / 5 mΩ

Topology features

- Temperature sensor
- Half Bridge

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

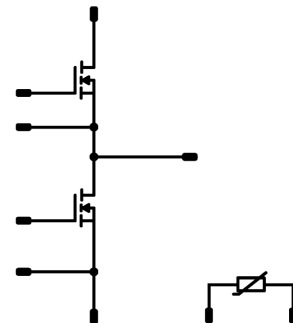
Types

- 10-EY232PB005ME01-PN99F08T

flow E2 12 mm housing



Schematic





Vincotech

10-EY232PB005ME01-PN99F08T
datasheet

Maximum Ratings

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

Parameter	Symbol	Conditions	Value	Unit
Half-Bridge Switch				
Drain-source voltage	V_{DS}		2300	V
Drain current (DC current)	I_D	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	220	A
Peak drain current	I_{DM}	t_p limited by T_{jmax}	996	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	676	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



Vincotech

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	

Half-Bridge Switch

Static

Drain-source on-state resistance ⁽¹⁾	$r_{DS(on)}$		15		414	25 175		5 14,5	6,5	mΩ
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$			0,114	25	1,8	2,5	3,6	V
Gate to Source Leakage Current	I_{GSS}		15	0		25		60	600	nA
Zero Gate Voltage Drain Current	I_{DSS}		0	2300		25		6	60	μA
Internal gate resistance	r_g							1		Ω
Gate charge	Q_g		-4/15	1500	414	25		882		nC
Short-circuit input capacitance	C_{iss}	$f = 100$ kHz	0	1500	0	25		36000		pF
Short-circuit output capacitance	C_{oss}							612		
Reverse transfer capacitance	C_{rss}							60		
Diode forward voltage	V_{SD}		0		210	25		5,5		V

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{paste} = 5,2$ W/mK (PTM)						0,14		K/W
--	---------------	---------------------------------------	--	--	--	--	--	------	--	-----



Vincotech

10-EY232PB005ME01-PN99F08T

datasheet

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	420	25 125 150		31,08 29,59 29,23		ns	
Rise time	t_r					25 125 150		20,04 18,16 17,96		ns	
Turn-off delay time	$t_{d(off)}$					25 125 150		130,5 146,58 150,93		ns	
Fall time	t_f					25 125 150		16,85 18,4 18,41		ns	
Turn-on energy (per pulse)	E_{on}	$Q_{tFWD}=3,74 \mu C$ $Q_{tFWD}=8,55 \mu C$ $Q_{tFWD}=13,5 \mu C$				25 125 150		8,49 8,25 9,1		mWs	
Turn-off energy (per pulse)	E_{off}					25 125 150		12,26 13 13,37		mWs	
Peak recovery current	I_{RRM}	$di/dt=26330 A/\mu s$ $di/dt=27663 A/\mu s$ $di/dt=26551 A/\mu s$				25 125 150		252,83 333,67 419,3		A	
Reverse recovery time	t_{rr}					25 125 150		24,79 41,6 51,51		ns	
Recovered charge	Q_r					25 125 150		3,74 8,55 13,5		μC	
Reverse recovered energy	E_{rec}					25 125 150		3,45 8,8 14,15		mWs	
Peak rate of fall of recovery current	$(di_{rr}/dt)_{max}$					25 125 150		23214,9 17624,76 19392,74		A/ μs	



Vincotech

10-EY232PB005ME01-PN99F08T
datasheet

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.



Vincotech

10-EY232PB005ME01-PN99F08T datasheet

Half-Bridge Switch Characteristics

figure 1. MOSFET

Typical output characteristics including $R_{DS(on)} + R_{DS}$

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

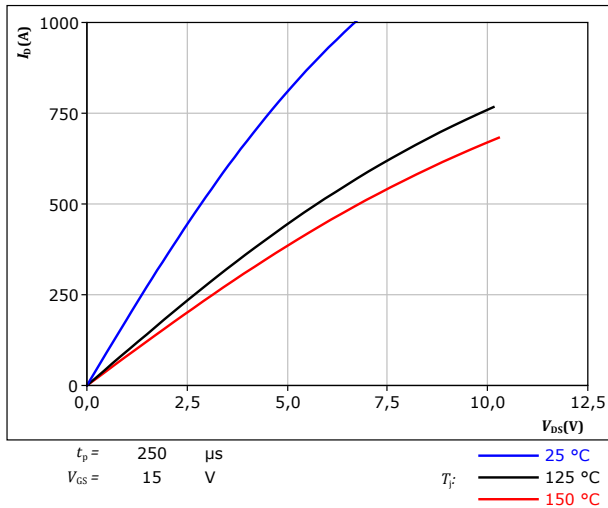


figure 2. MOSFET

Typical output characteristics including $R_{DS(on)} + R_{DS}$

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

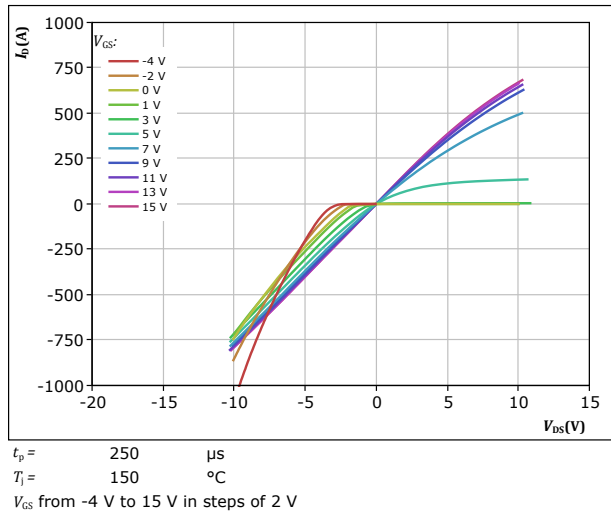


figure 3. MOSFET

Typical transfer characteristics

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

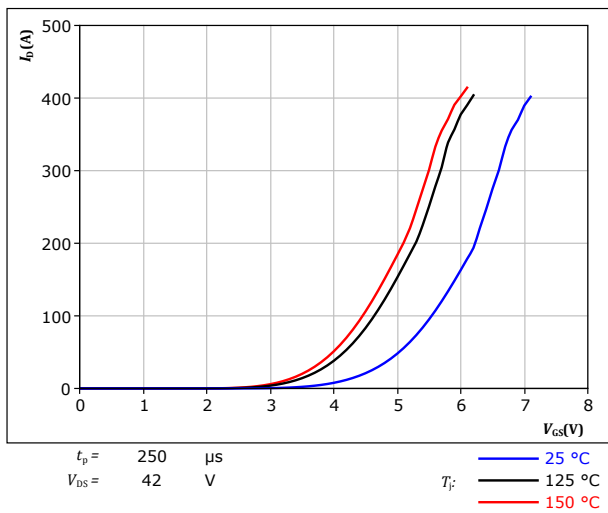
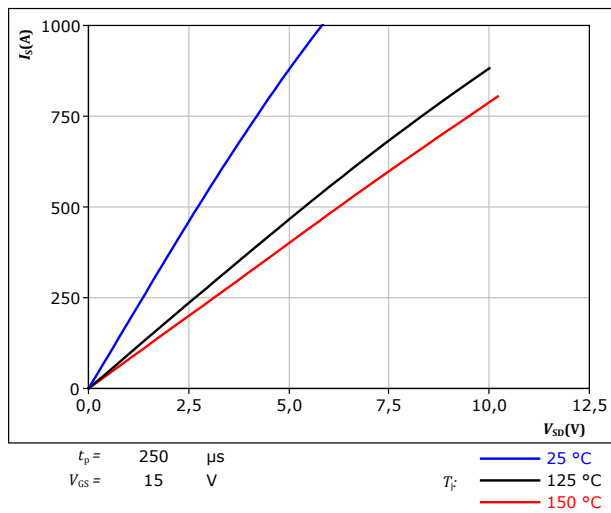


figure 4. MOSFET

Typical reverse drain current characteristics including $R_{DS(on)} + R_{DS}$

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





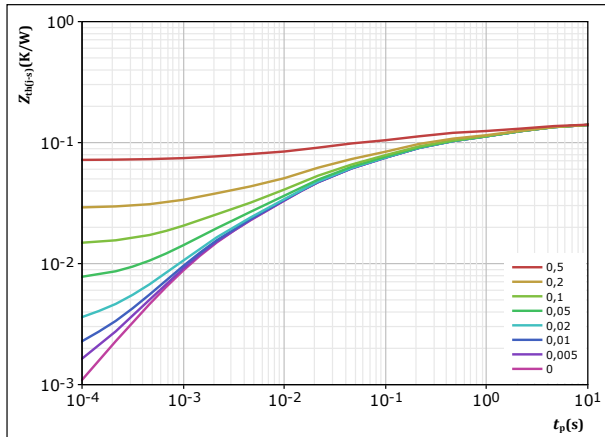
Vincotech

Half-Bridge Switch Characteristics

figure 5. MOSFET

Transient thermal impedance as a function of pulse width

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



$$D = t_p / T$$

$$R_{th(j-a)} = 0,141 \text{ K/W}$$

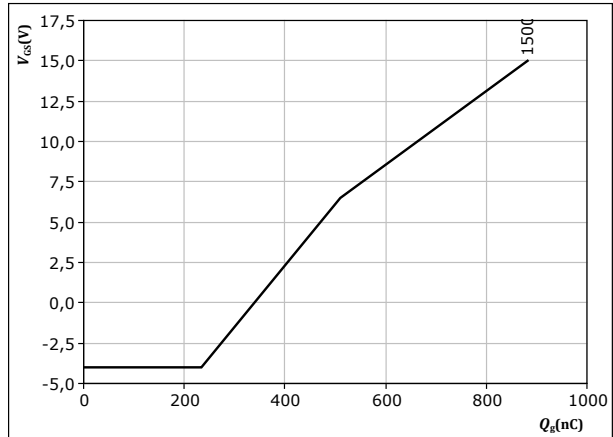
MOSFET thermal model values

R (K/W)	τ (s)
1,37E-02	7,18E+00
3,54E-02	1,56E+00
4,68E-02	1,29E-01
3,56E-02	1,47E-02
1,18E-02	1,40E-03

figure 6. MOSFET

Gate voltage vs gate charge

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



$$I_D = 300 \text{ A}$$

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



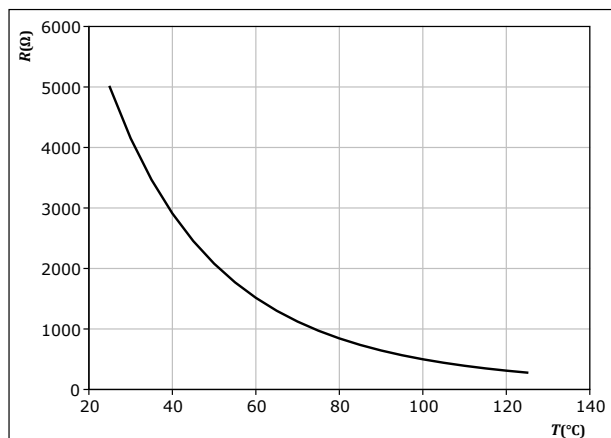
Vincotech

Thermistor Characteristics

figure 7. Thermistor

Typical NTC characteristic as function of temperature

$$R_T = f(T)$$





Vincotech

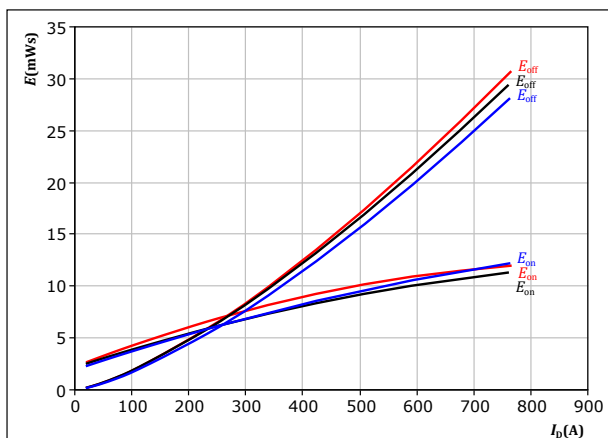
10-EY232PB005ME01-PN99F08T datasheet

Half-Bridge Switching Characteristics

figure 8. MOSFET

Typical switching energy losses as a function of drain current

$$E = f(I_D)$$



With an inductive load at

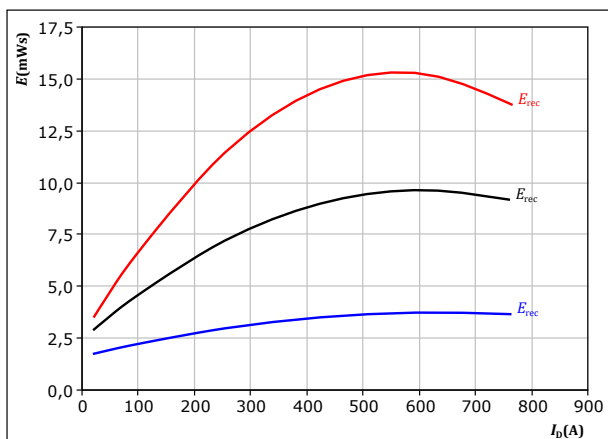
$V_{DS} = 1200 \text{ V}$
 $V_{GS} = -4/15 \text{ V}$
 $R_{gon} = 0,5 \text{ } \Omega$
 $R_{goff} = 0,5 \text{ } \Omega$

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

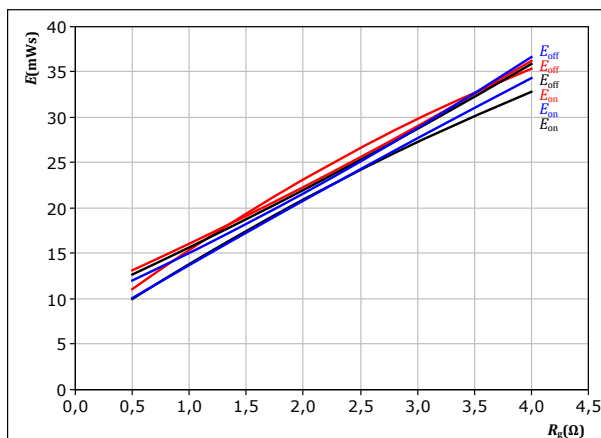
$V_{DS} = 1200 \text{ V}$
 $V_{GS} = -4/15 \text{ V}$
 $R_{gon} = 0,5 \text{ } \Omega$

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

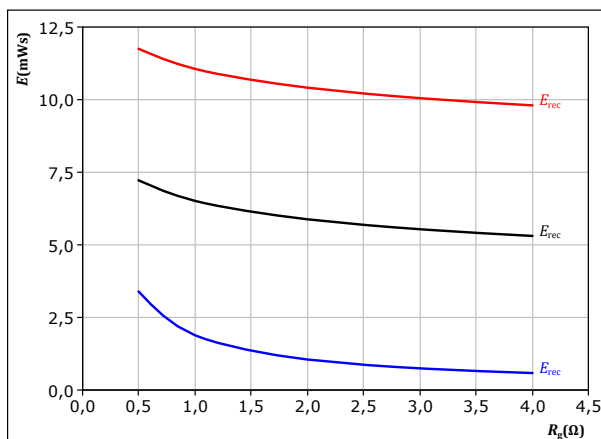
$V_{DS} = 1200 \text{ V}$
 $V_{GS} = -4/15 \text{ V}$
 $I_D = 420 \text{ A}$

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

$V_{DS} = 1200 \text{ V}$
 $V_{GS} = -4/15 \text{ V}$
 $I_D = 420 \text{ A}$

T_j : 25 °C
125 °C
150 °C



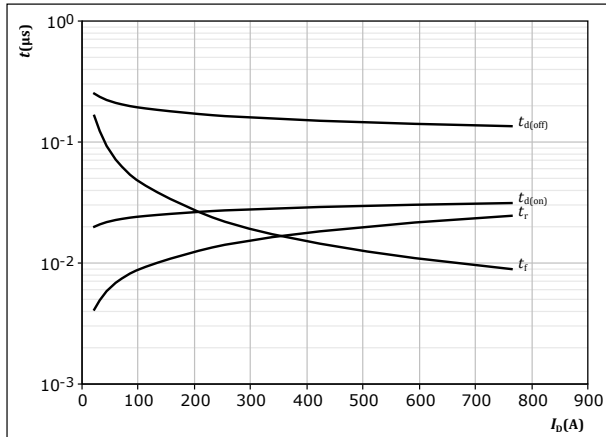
Vincotech

10-EY232PB005ME01-PN99F08T datasheet

Half-Bridge Switching Characteristics

figure 12. MOSFET

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

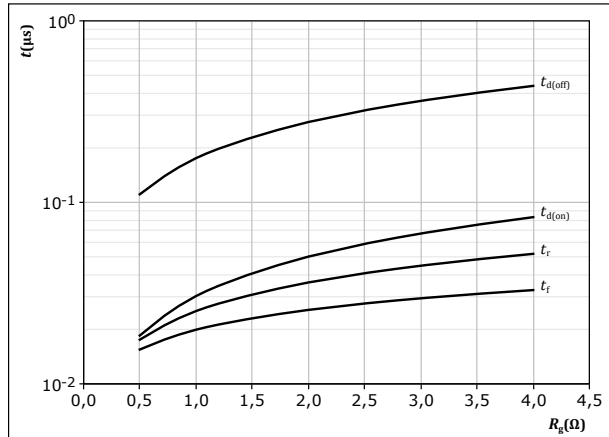


With an inductive load at

$T_j = 150$ °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
 $t = f(R_g)$

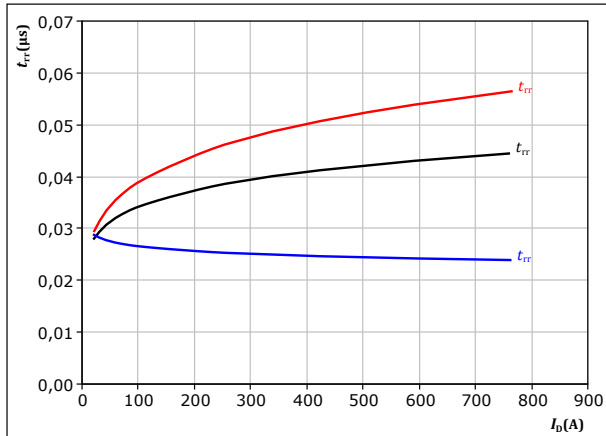


With an inductive load at

$T_j = 150$ °C
 $V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $I_D = 420$ A

figure 14. MOSFET

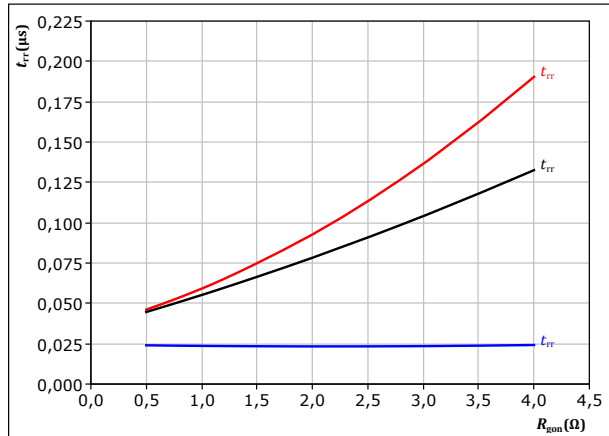
Typical reverse recovery time as a function of drain current
 $t_{rr} = f(I_D)$



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
 $I_D = 420$ A
 $T_j: 25$ °C (blue)
 125 °C (black)
 150 °C (red)



Vincotech

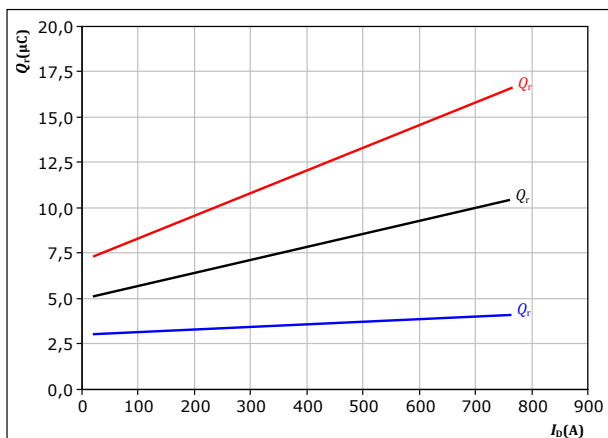
Half-Bridge Switching Characteristics

figure 16.

MOSFET

Typical recovered charge as a function of drain current

$$Q_r = f(I_D)$$



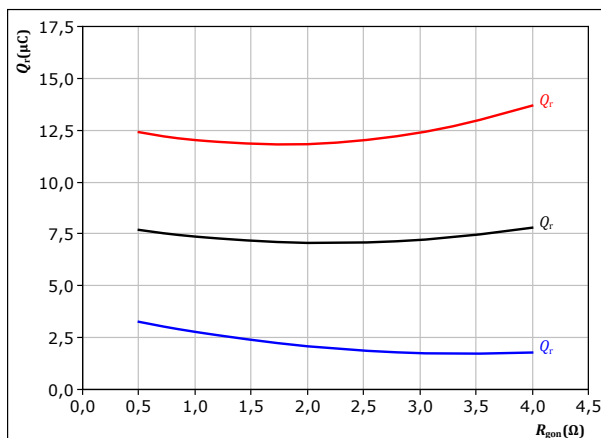
At $V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $R_{gon} = 0,5$ Ω
 T_j : 25 °C (blue), 125 °C (black), 150 °C (red)

figure 17.

MOSFET

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

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



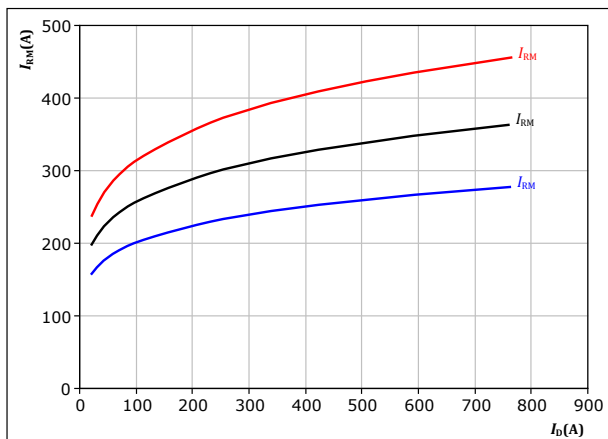
At $V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $I_D = 420$ A
 T_j : 25 °C (blue), 125 °C (black), 150 °C (red)

figure 18.

MOSFET

Typical peak reverse recovery current as a function of drain current

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



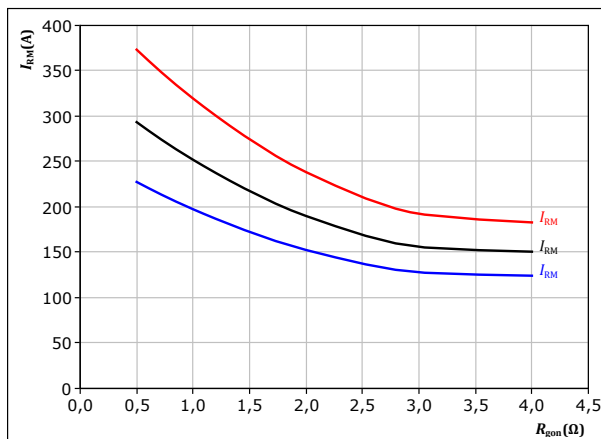
At $V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $R_{gon} = 0,5$ Ω
 T_j : 25 °C (blue), 125 °C (black), 150 °C (red)

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
 $I_D = 420$ A
 T_j : 25 °C (blue), 125 °C (black), 150 °C (red)

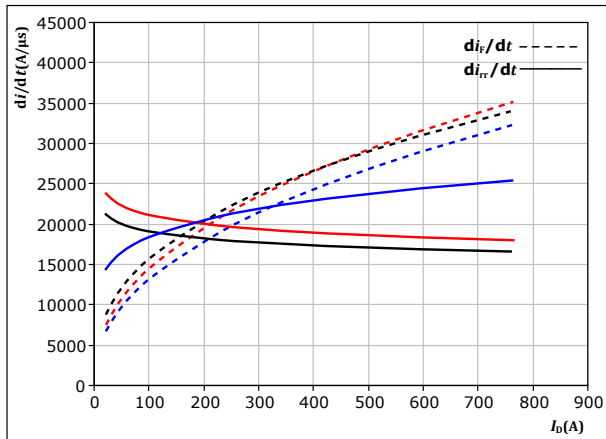


Vincotech

Half-Bridge Switching Characteristics

figure 20. MOSFET

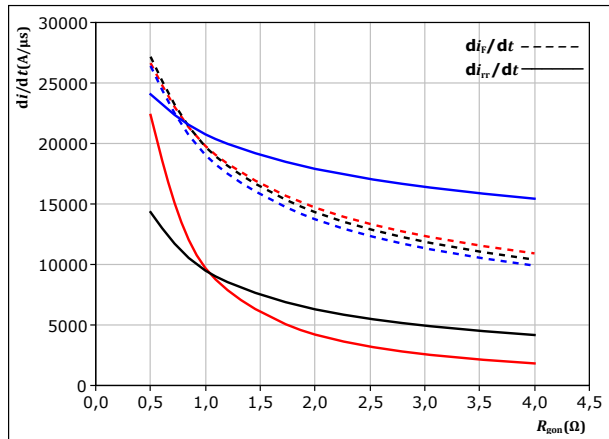
Typical rate of fall of forward and reverse recovery current as a function of drain current
 $di_f/dt, di_r/dt = f(I_D)$



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

figure 21. MOSFET

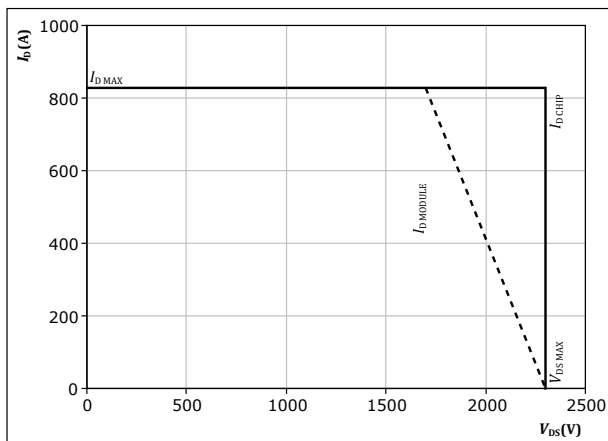
Typical rate of fall of forward and reverse recovery current as a function of turn on gate resistor
 $di_f/dt, di_r/dt = f(R_{gon})$



At $V_{DS} = 1200$ V
 $V_{GS} = -4/15$ V
 $I_D = 420$ A
 $T_j: 25$ °C
 125 °C
 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



Vincotech

10-EY232PB005ME01-PN99F08T datasheet

Half-Bridge 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

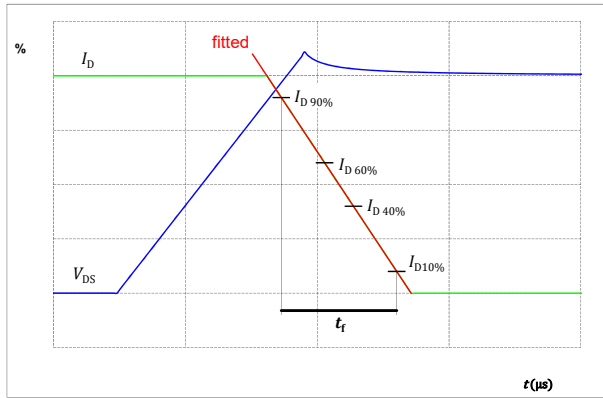
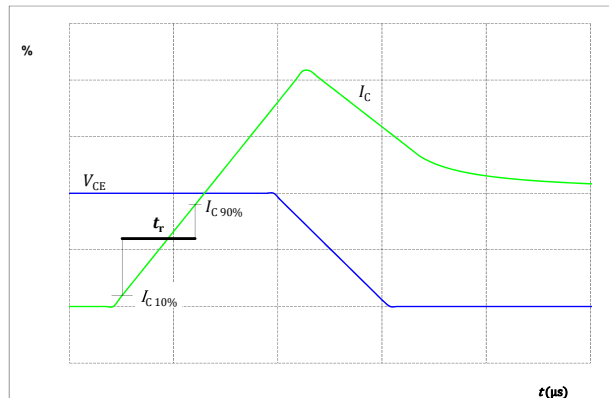


figure 26. MOSFET

Turn-on Switching Waveforms & definition of t_r





Vincotech

Half-Bridge Switching Definitions

figure 27. FWD

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

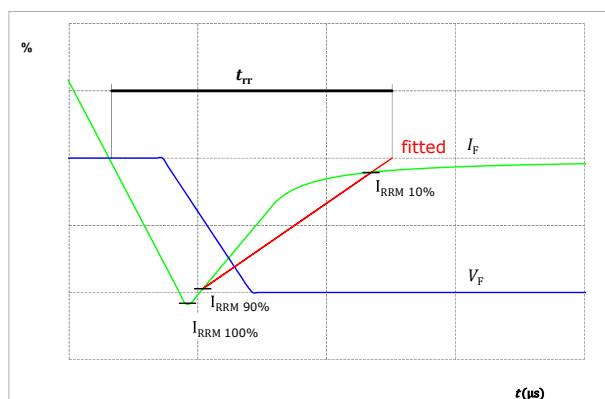


figure 28. FWD

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

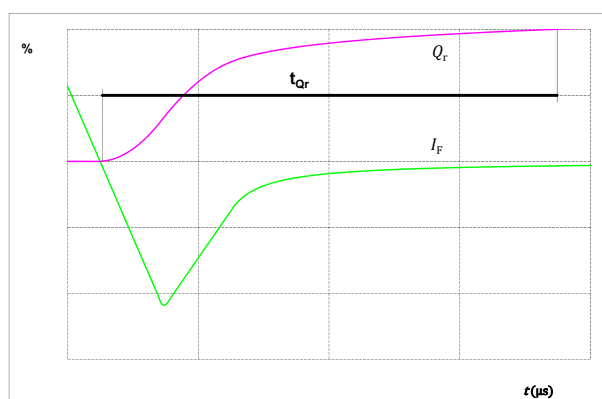
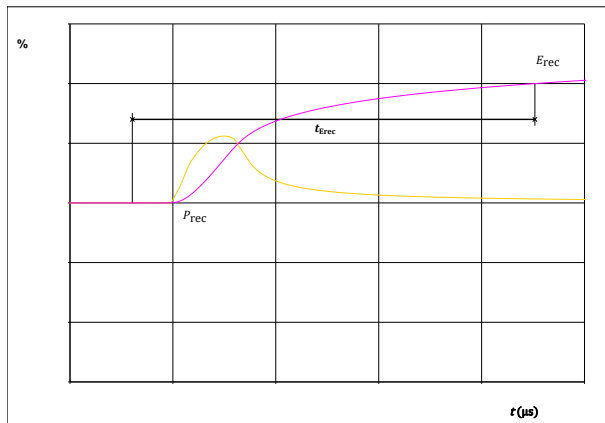


figure 29. FWD

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-EY232PB005ME01-PN99F08T
With thermal paste (5,2 W/mK, PTM6000HV)	10-EY232PB005ME01-PN99F08T-/7/

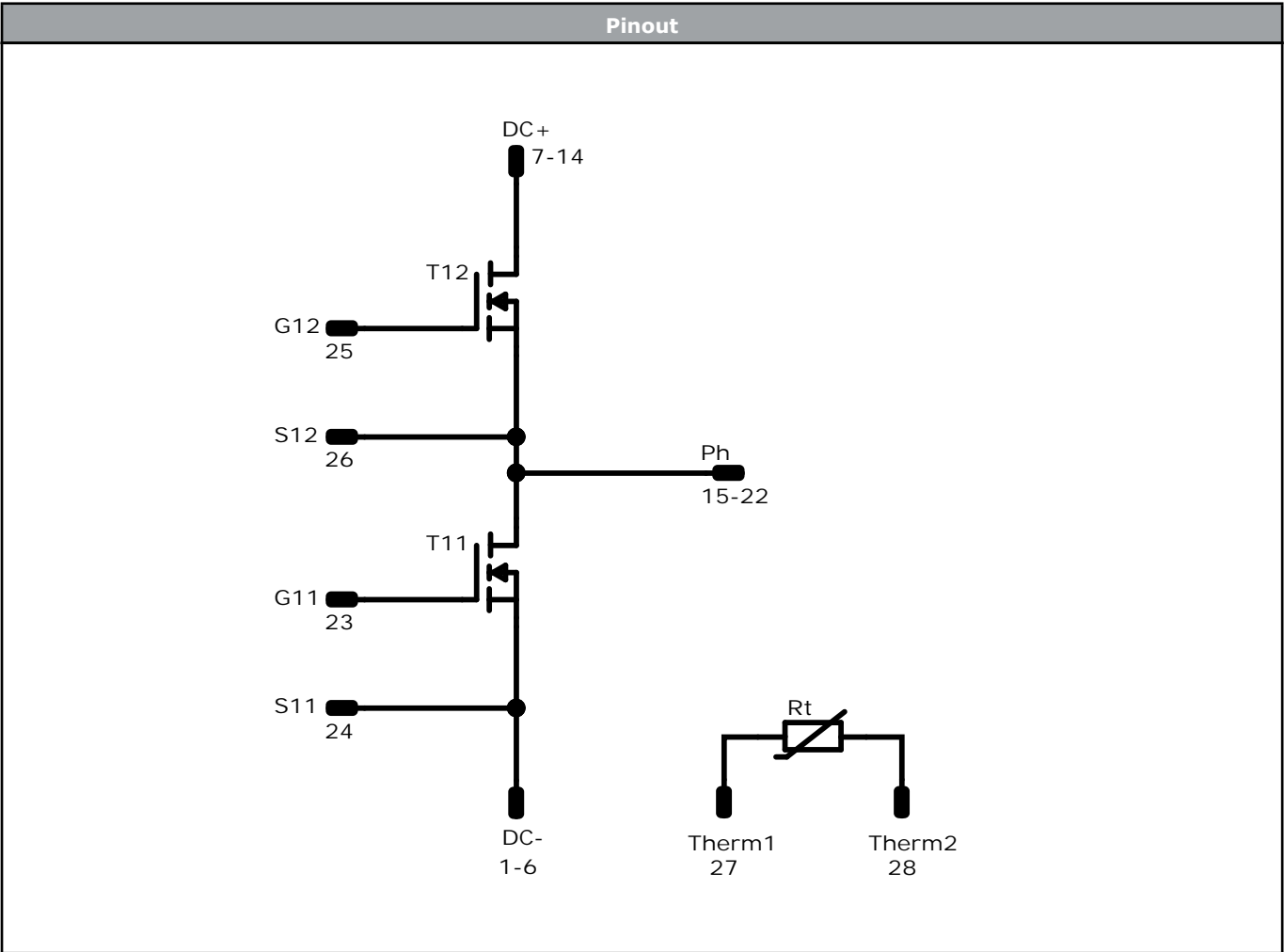
Marking							
 <small>Unit Unit Unit Unit Unit Unit Unit</small>	Text	Name		Date code	UL & VIN	Lot	Serial
		NN-NNNNNNNNNNNNNN- TTTTTVV		WWYY	UL VIN	LLLLL	SSSS
	Datamatrix	Type&Ver	Lot number	Serial	Date code		
	TTTTTIVV	LLLLL	SSSS	WWYY			

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

Tolerance of positions ±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	5 mΩ	Half-Bridge Switch	
Rt	Thermistor			Thermistor	



Vincotech

10-EY232PB005ME01-PN99F08T
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-EY232PB005ME01-PN99F08T-D2-14	26 Nov. 2025	Change Half-Bridge Switch	

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.