Vincotech

10-EZ122PA015MS-LJ67F78T
datasheet

flowDUAL E1 SiC **1200 V / 15 mΩ**

Topology features

- Temperature sensor
- Half Bridge

Component features

- High Blocking Voltage with low drain source on state resistance
- High speed SiC-MOSFET technology
- Resistant to Latch-up

Housing features

- Base isolation: Al_2O_3
- 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

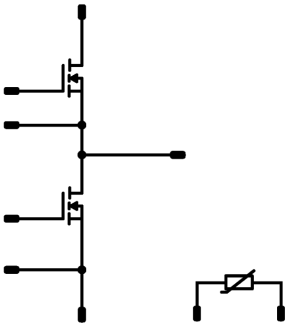
- Charging Stations
- Energy Storage Systems
- General
- Industrial Drives
- Power Supply
- Servo Drives
- Solar Inverters
- UPS

Types

- 10-EZ122PA015MS-LJ67F78T

flow E1 12 mm housing

Schematic



Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
Inverter Switch				
Drain-source voltage	V_{DSS}		1200	V
Drain current (DC current)	I_D	T_j = T_{jmax} T_s = 80 °C	87	A
Peak drain current	I_{DM}	t_p limited by T_{jmax}	320	A
Total power dissipation	P_{tot}	T_j = T_{jmax} T_s = 80 °C	166	W
Gate-source voltage	V_{GSS}	static	-5 / 18	V
		dynamic	-10 / 22	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 s	6000	V
Creepage distance			>12,7	mm
Clearance			8,62	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	
Inverter Switch										
Static										
Drain-source on-state resistance	$r_{DS(on)}$		18		80	25 125 150		14,8 18,5 20,4	22,5[1]	mΩ
Gate-source threshold voltage	$V_{GS(th)}$				0,008	25	1,7	2,25	2,75	V
Gate to Source Leakage Current	I_{GSS}		22	0		25			200	nA
Zero Gate Voltage Drain Current	I_{DSS}		0	1200		25			20	µA
Internal gate resistance	r_g							1		Ω
Gate charge	Q_g		-5/18	800	80	25		216		nC
Short-circuit input capacitance	C_{iss}	f = 500 kHz	0	800	0	25		5200		pF
Short-circuit output capacitance	C_{oss}							270		
Reverse transfer capacitance	C_{rss}							12		
Diode forward voltage	V_{SD}		0		80	25		4,1		V
Thermal										
Thermal resistance junction to sink[2]	$R_{th(j-s)}$	λ_{paste} = 5,2 W/mK (PTM)						0,57		K/W

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} = 8 Ω R_{goff} = 8 Ω	-5/18	600	80	25 125 150		40,95 45,76 44,28		ns
Rise time	t_r					25 125 150		26,13 20,66 20,2		ns
Turn-off delay time	$t_{d(off)}$					25 125 150		75,98 88,65 91,17		ns
Fall time	t_f					25 125 150		14,06 12,26 11,42		ns
Turn-on energy (per pulse)	E_{on}	Q_{rFWD}=0,345 µC Q_{rFWD}=1,1 µC Q_{rFWD}=1,32 µC				25 125 150		1,77 1,85 1,91		mWs
Turn-off energy (per pulse)	E_{off}					25 125 150		0,449 0,501 0,511		mWs
Peak recovery current	I_{RRM}	di/dt=3585 A/µs di/dt=4277 A/µs di/dt=4335 A/µs				25 125 150		31,14 56,86 64,83		A
Reverse recovery time	t_{rr}					25 125 150		19,41 30,96 32		ns
Recovered charge	Q_r					25 125 150		0,345 1,1 1,32		µC
Reverse recovered energy	E_{rec}					25 125 150		0,04 0,231 0,272		mWs
Peak rate of fall of recovery current	$(di_{rf}/dt)_{max}$					25 125 150		4041,86 4072,4 5110,61		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	
Thermistor										
Static										
Rated resistance	R					25		5		kΩ
Deviation of R100	$\Delta_{R/R}$	R_{100} = 499 Ω				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. ±1 %						3380		K
Vincotech Thermistor Reference									V	

(1) Value at chip level

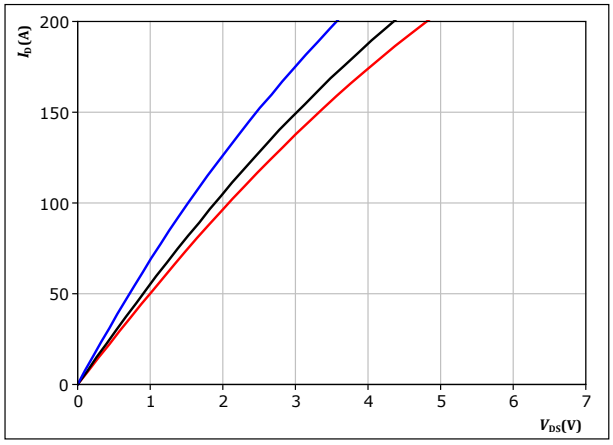
(2) Only valid with pre-applied Vincotech thermal interface material.

Inverter Switch Characteristics

figure 1. **MOSFET**

Typical output characteristics

$I_D = f(V_{DS})$

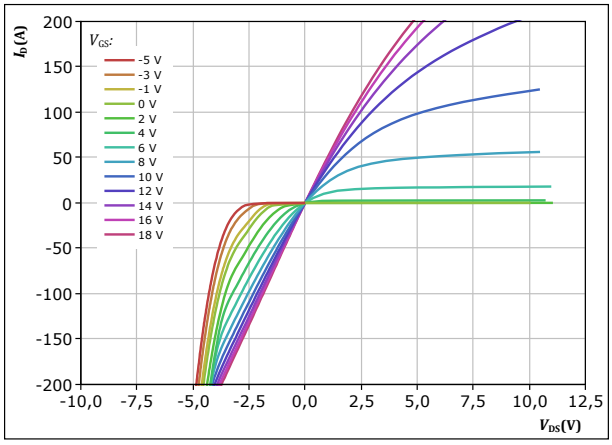


t_p =	250	µs		
V_{GS} =	18	V	T_j:	25 °C
				125 °C
				150 °C

figure 2. **MOSFET**

Typical output characteristics

$I_D = f(V_{DS})$



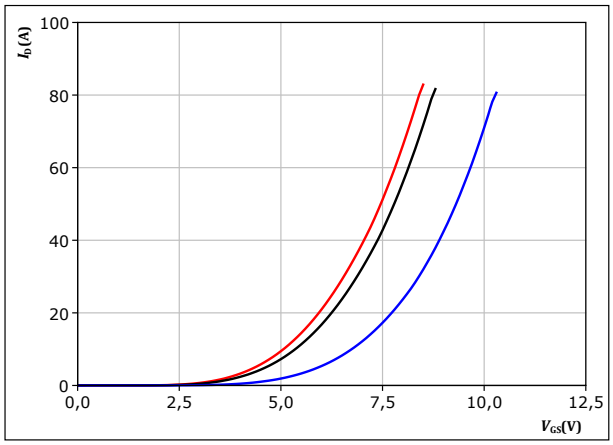
t_p =	250	µs
T_j =	150	°C

V_{GS} from -5 V to 18 V in steps of 2 V

figure 3. **MOSFET**

Typical transfer characteristics

$I_D = f(V_{GS})$

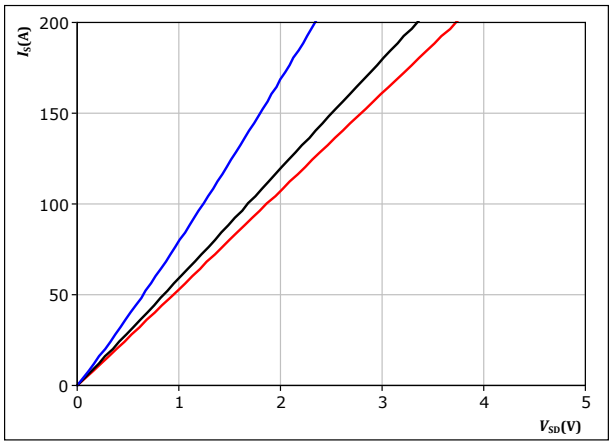


t_p =	250	µs		
V_{DS} =	30	V	T_j:	25 °C
				125 °C
				150 °C

figure 4. **MOSFET**

Typical reverse drain current characteristics

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



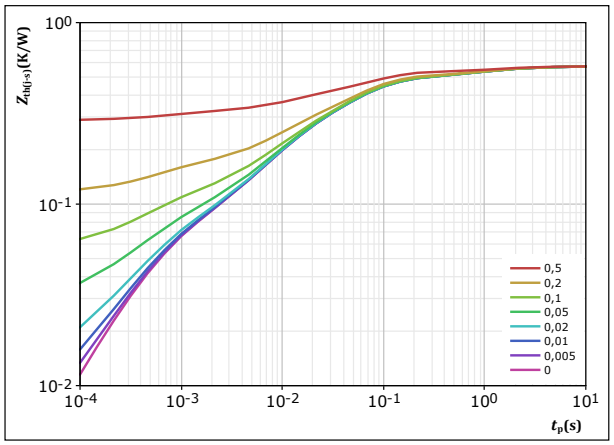
t_p =	250	µs		
V_{GS} =	18	V	T_j:	25 °C
				125 °C
				150 °C

Inverter Switch Characteristics

figure 5. **MOSFET**

Transient thermal impedance as a function of pulse width

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



D =	t_p / T	
$R_{th(j-s)}$ =	0,574	K/W

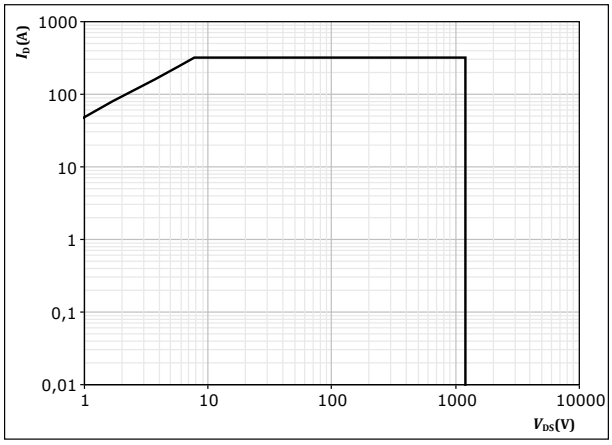
MOSFET thermal model values

R (K/W)	τ (s)
1,49E-02	7,19E+00
7,90E-02	9,10E-01
2,88E-01	5,48E-02
1,41E-01	8,91E-03
5,45E-02	5,28E-04

figure 6. **MOSFET**

Safe operating area

$I_D = f(V_{DS})$



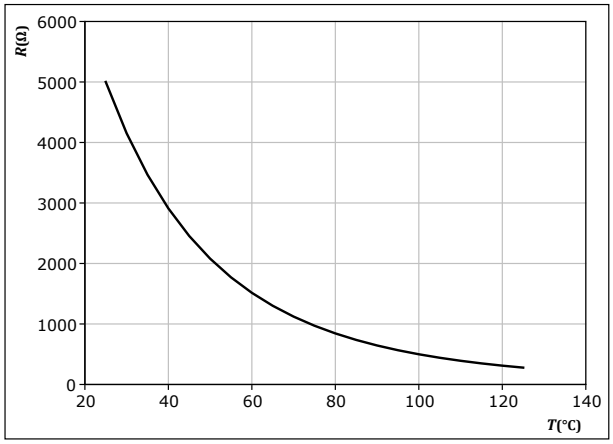
D =	single pulse	
T_s =	80	°C
V_{GS} =	18	V
T_j =	T_{jmax}	

Thermistor Characteristics

figure 7. **Thermistor**

Typical NTC characteristic as function of temperature

$R_T = f(T)$

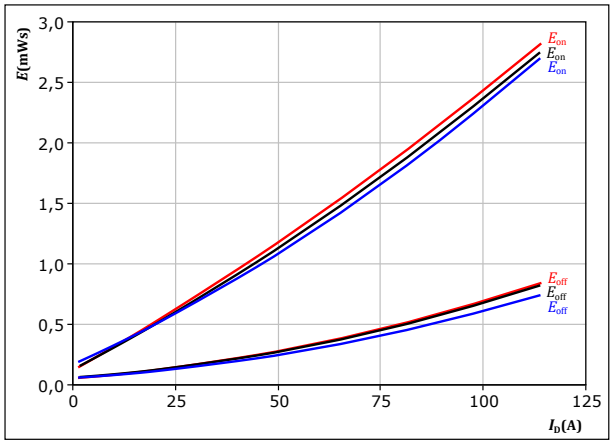


Inverter Switching Characteristics

figure 8. **MOSFET**

Typical switching energy losses as a function of drain current

$E = f(I_D)$



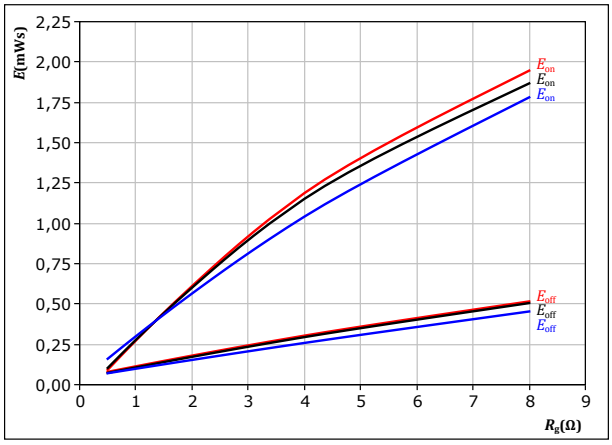
With an inductive load at

V_{DS} =	600	V	T_j:	25 °C
V_{GS} =	-5/18	V		125 °C
R_{gon} =	8	Ω		150 °C
R_{goff} =	8	Ω		

figure 9. **MOSFET**

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

$E = f(R_g)$



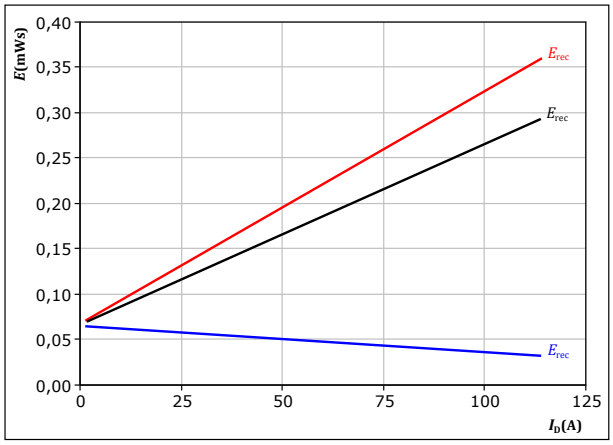
With an inductive load at

V_{DS} =	600	V	T_j:	25 °C
V_{GS} =	-5/18	V		125 °C
I_D =	80	A		150 °C

figure 10. **MOSFET**

Typical reverse recovered energy loss as a function of drain current

$E_{rec} = f(I_D)$



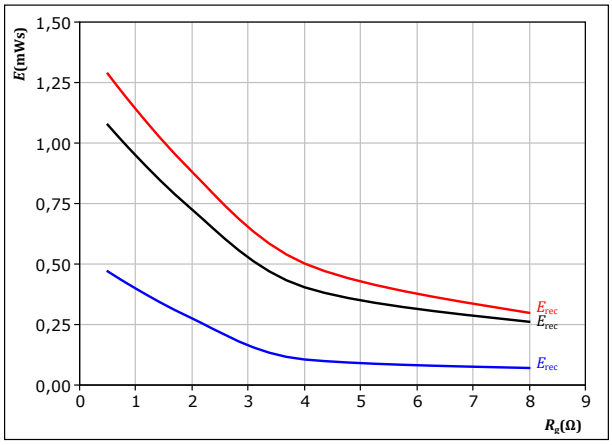
With an inductive load at

V_{DS} =	600	V	T_j:	25 °C
V_{GS} =	-5/18	V		125 °C
R_{gon} =	8	Ω		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

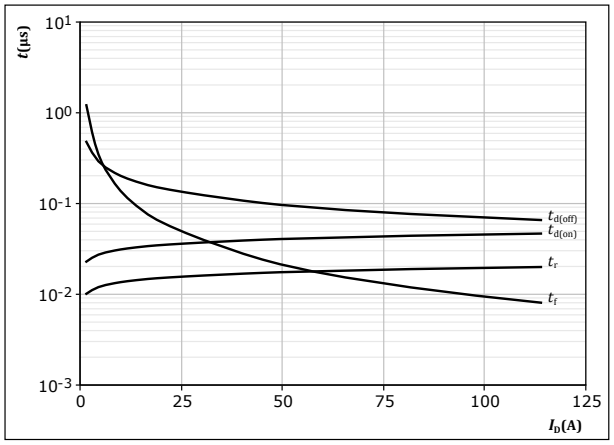
V_{DS} =	600	V	T_j:	25 °C
V_{GS} =	-5/18	V		125 °C
I_D =	80	A		150 °C

Inverter Switching Characteristics

figure 12. **MOSFET**

Typical switching times as a function of drain current

$t = f(I_D)$



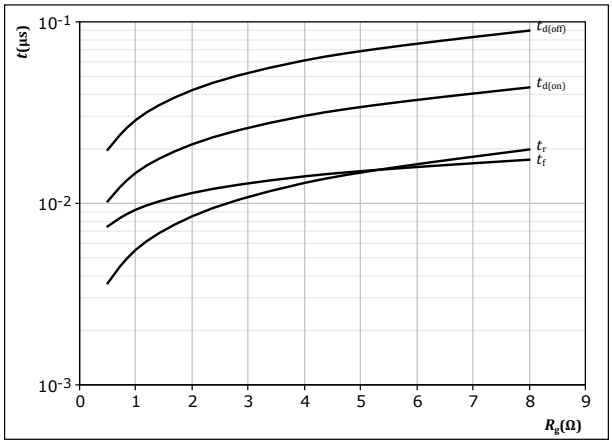
With an inductive load at

T_j =	150	°C
V_{DS} =	600	V
V_{GS} =	-5/18	V
R_{gon} =	8	Ω
R_{goff} =	8	Ω

figure 13. **MOSFET**

Typical switching times as a function of MOSFET turn on gate resistor

$t = f(R_g)$



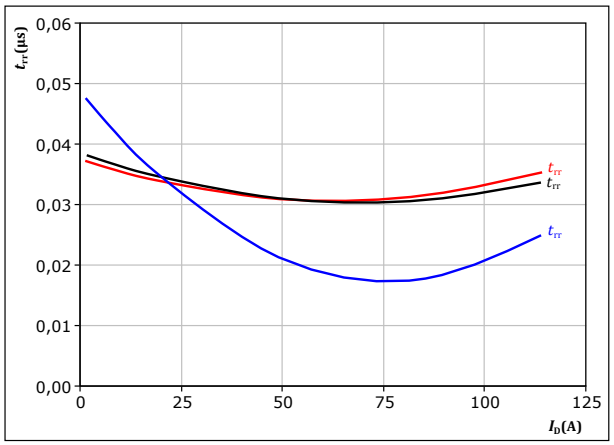
With an inductive load at

T_j =	150	°C
V_{DS} =	600	V
V_{GS} =	-5/18	V
I_D =	80	A

figure 14. **MOSFET**

Typical reverse recovery time as a function of drain current

$t_{rr} = f(I_D)$



At

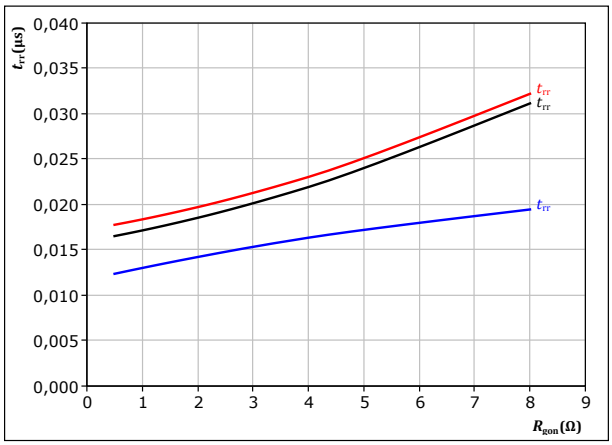
V_{DS} =	600	V
V_{GS} =	-5/18	V
R_{gon} =	8	Ω

T_j: 25 °C, 125 °C, 150 °C

figure 15. **MOSFET**

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

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



At

V_{DS} =	600	V
V_{GS} =	-5/18	V
I_D =	80	A

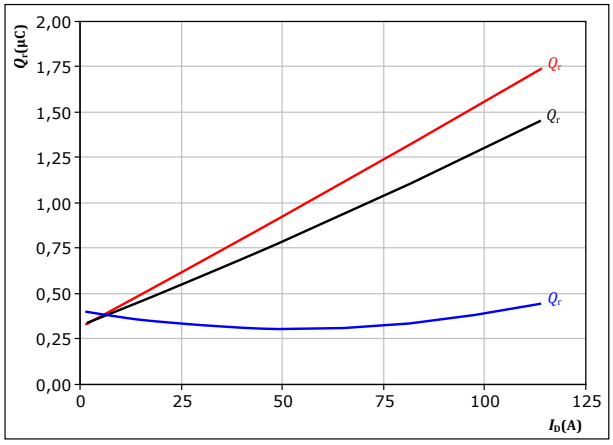
T_j: 25 °C, 125 °C, 150 °C

Inverter Switching Characteristics

figure 16. **MOSFET**

Typical recovered charge as a function of drain current

$Q_r = f(I_D)$

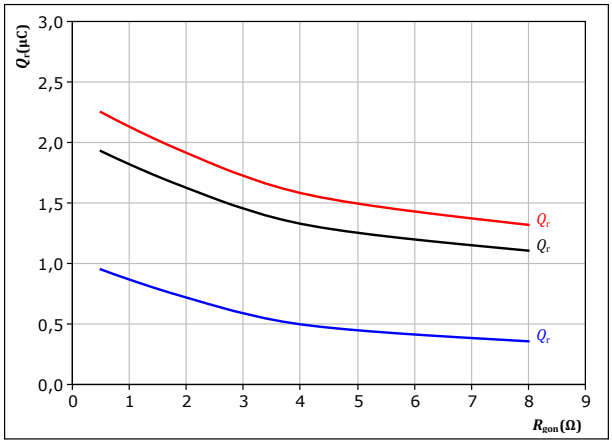


At					
	V_{DS} =	600	V		
	V_{GS} =	-5/18	V	T_j:	25 °C
	R_{gon} =	8	Ω		125 °C
					150 °C

figure 17. **MOSFET**

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

$Q_r = f(R_{gon})$

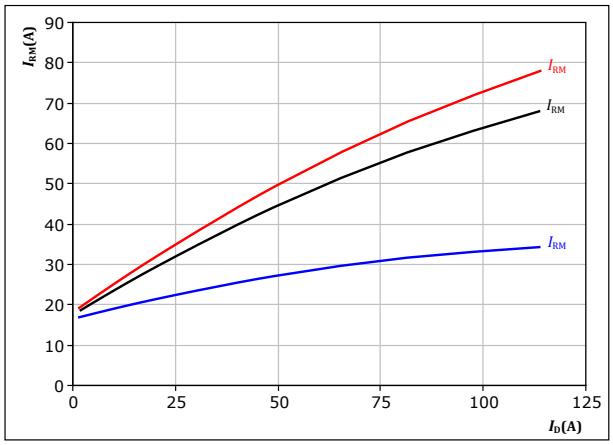


At					
	V_{DS} =	600	V		
	V_{GS} =	-5/18	V	T_j:	25 °C
	I_D =	80	A		125 °C
					150 °C

figure 18. **MOSFET**

Typical peak reverse recovery current as a function of drain current

$I_{RM} = f(I_D)$

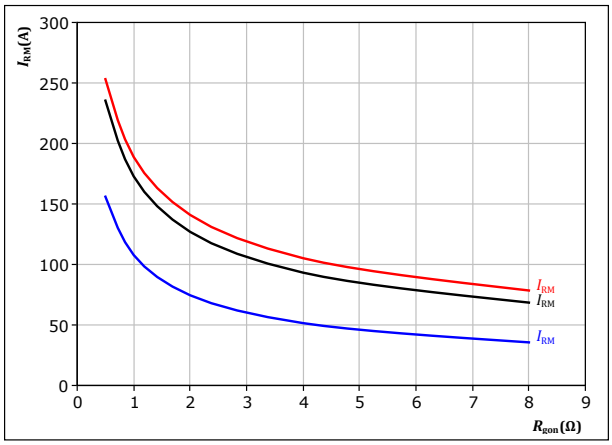


At					
	V_{DS} =	600	V		
	V_{GS} =	-5/18	V	T_j:	25 °C
	R_{gon} =	8	Ω		125 °C
					150 °C

figure 19. **MOSFET**

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

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



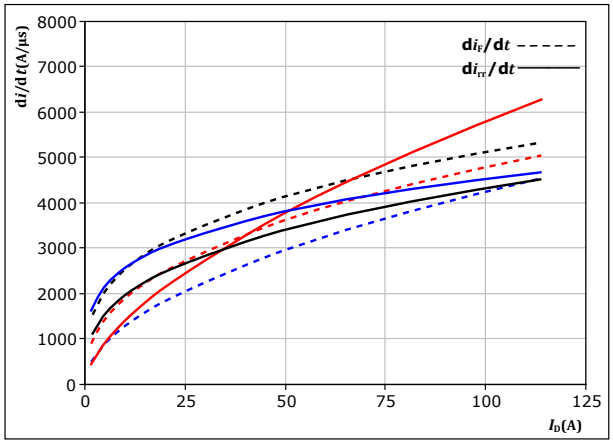
At					
	V_{DS} =	600	V		
	V_{GS} =	-5/18	V	T_j:	25 °C
	I_D =	80	A		125 °C
					150 °C

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_{rr}/dt = f(I_D)

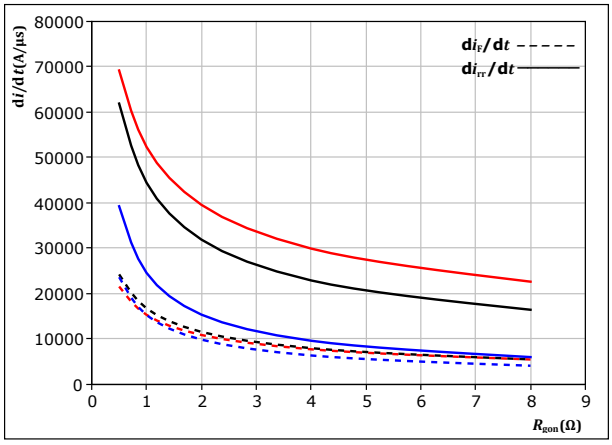


At				
	V_{DS} =	600	V	
	V_{GS} =	-5/18	V	T_j: 25 °C, 125 °C, 150 °C
	R_{gon} =	8	Ω	

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_{rr}/dt = f(R_{gon})

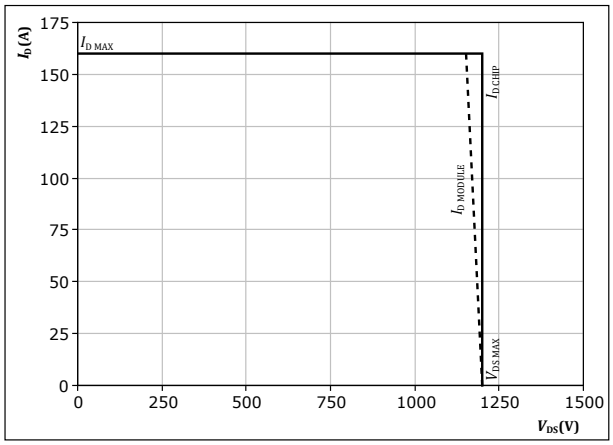


At				
	V_{DS} =	600	V	
	V_{GS} =	-5/18	V	T_j: 25 °C, 125 °C, 150 °C
	I_D =	80	A	

figure 22. **MOSFET**

Reverse bias safe operating area

I_D = f(V_{DS})



At			
	T_j =	150	°C
	R_{gon} =	8	Ω
	R_{goff} =	8	Ω

Inverter Switching Definitions

figure 23. **MOSFET**

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

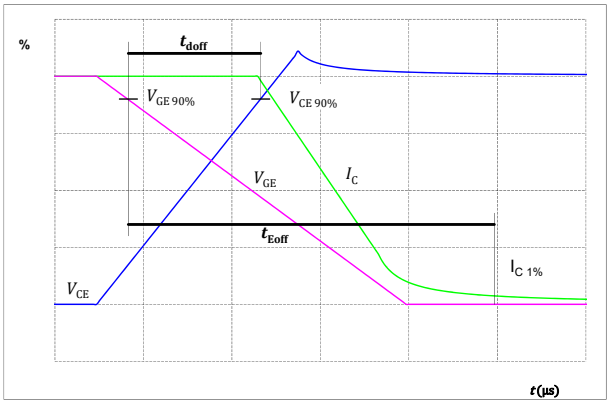


figure 24. **MOSFET**

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

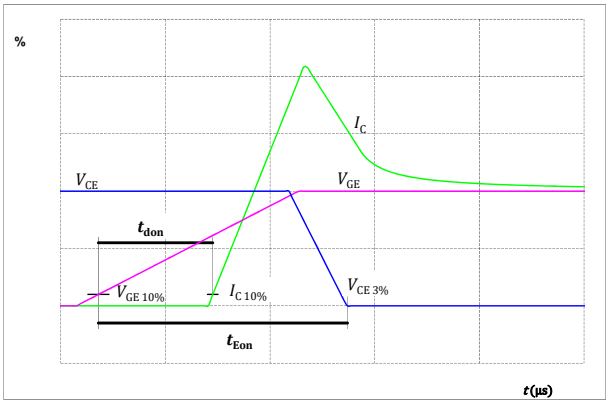


figure 25. **MOSFET**

Turn-off Switching Waveforms & definition of t_f

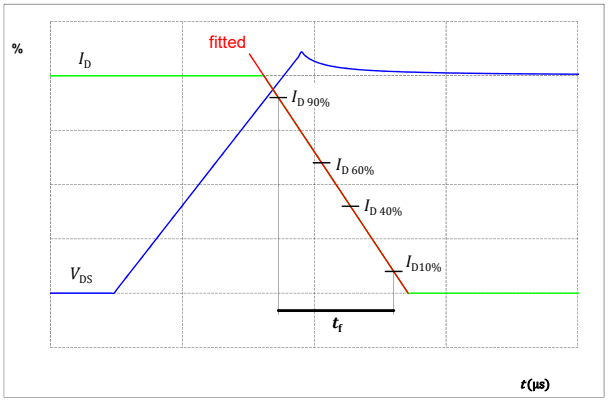
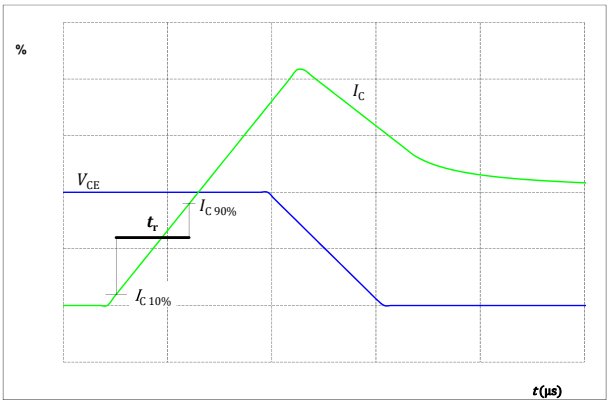


figure 26. **MOSFET**

Turn-on Switching Waveforms & definition of t_r



Inverter Switching Definitions

figure 27. **FWD**

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

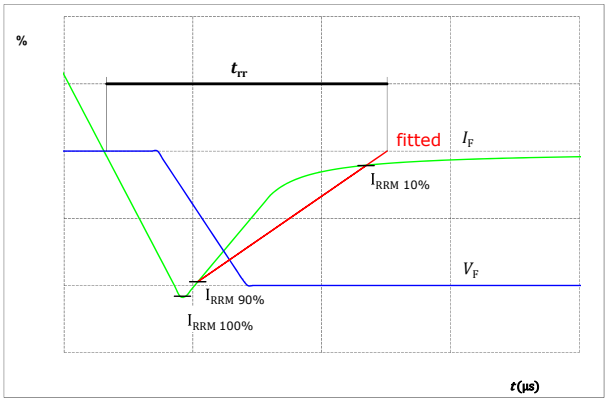


figure 28. **FWD**

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

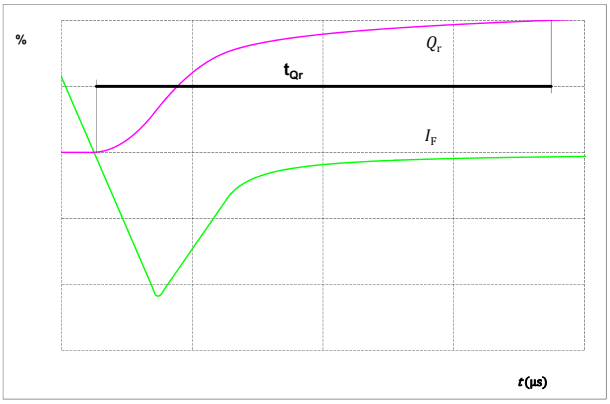
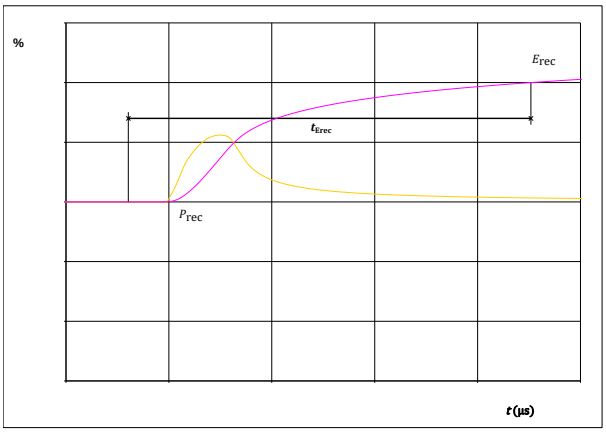


figure 29. **FWD**

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



Ordering Code

Version	Ordering Code
Without thermal paste	10-EZ122PA015MS-LJ67F78T
With thermal paste (5,2 W/mK, PTM6000HV)	10-EZ122PA015MS-LJ67F78T-/7/

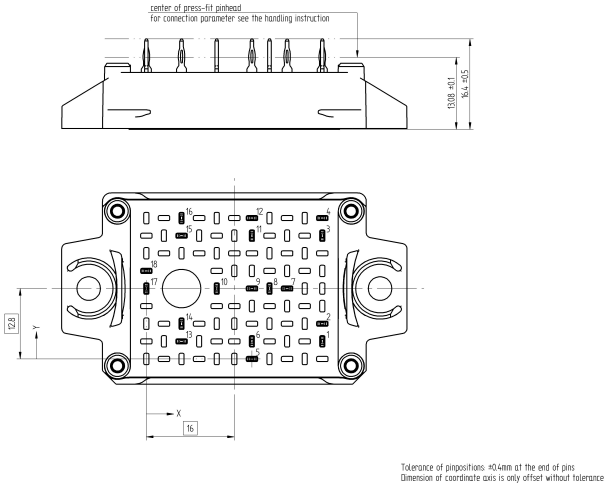
Marking

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

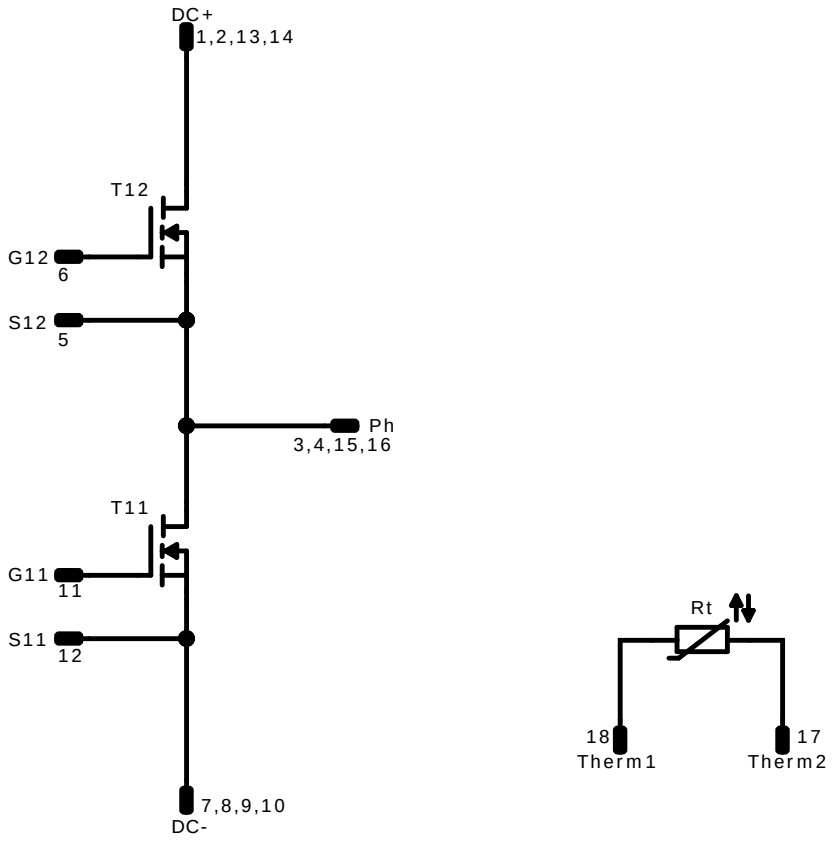
Outline

Pin table [mm]

Pin	X	Y	Function
1	32	3,2	DC+
2	32	6,4	DC+
3	32	22,4	Ph
4	32	25,6	Ph
5	19,2	0	S12
6	19,2	3,2	G12
7	25,6	12,8	DC-
8	22,4	12,8	DC-
9	19,2	12,8	DC-
10	12,8	12,8	DC-
11	19,2	22,4	G11
12	19,2	25,6	S11
13	6,4	3,2	DC+
14	6,4	6,4	DC+
15	6,4	22,4	Ph
16	6,4	25,6	Ph
17	0	12,8	Therm2
18	0	16	Therm1



Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
T11, T12	MOSFET	1200 V	15 mΩ	Inverter Switch	
Rt	Thermistor			Thermistor	

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

Handling instruction
Handling instructions for *flow* E1 packages see vincotech.com website.

Package data
Package data for *flow* E1 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 $T_{j,op}$=175°C and up to 3500VAC/1min isolation voltage. For more information see vincotech.com website.

Document No.:	Date:	Modification:	Pages
10-EZ122PA015MS-LJ67F78T-D1-14	8 Jan. 2026	Initial Release	