



Vincotech

30-EP12SAA001MS-PT59F77T

datasheet

flowDUAL E3BP SiC

1200 V / 1,4 mΩ

Topology features

- Common emitter point Half Bridge
- SiC MOSFET
- Temperature sensor

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: Al₂O₃
- Cu baseplate
- Convex shaped baseplate for superior thermal contact
- CTI600 housing material
- Baseplate with rough surface
- Press-fit pin
- Reliable cold welding connection
- Thermo-mechanical push-and-pull force relief

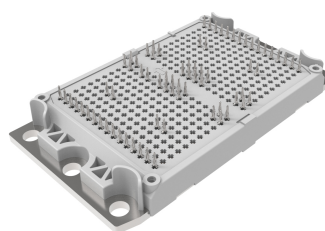
Target applications

- Embedded Drives
- Industrial Drives

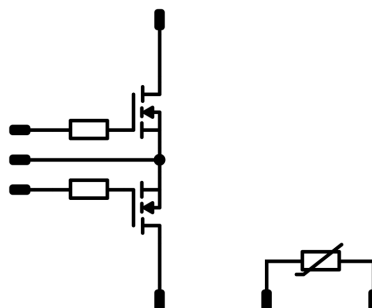
Types

- 30-EP12SAA001MS-PT59F77T

flow E3BP 12 mm housing



Schematic





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Maximum Ratings

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

Parameter	Symbol	Conditions	Value	Unit
AC Switch				
Drain-source voltage	V_{DS}		1200	V
Drain current (DC current)	I_D	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	680	A
Peak drain current	I_{DM}	t_p limited by T_{jmax}	3408	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	889	W
Gate-source voltage	V_{GS}	static	-5 / 18	V
		dynamic	-10 / 22	V
Maximum Junction Temperature	T_{jmax}		175	°C

Resistor (Gate)

DC current	I	terminal temperature $T_k = 90\text{ °C}$	4242	mA
Power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	3	W
Operation Temperature	T_{op}		-55 ... 155	°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			>12,7	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		

AC Switch

Static

Drain-source on-state resistance	$r_{DS(on)}$		18		852	25 125 150		1,47 1,75 1,91	2,08 ⁽¹⁾	mΩ
Gate-source threshold voltage	$V_{GS(th)}$				0,0852	25	1,7	2,25	2,75	V
Gate to Source Leakage Current	I_{GSS}		22	0		25			1200	nA
Zero Gate Voltage Drain Current	I_{DSS}		0	1200		25			120	μA
Internal gate resistance	r_g							0,083		Ω
Gate charge	Q_g		-5/18	800	852	25		2256		nC
Short-circuit input capacitance	C_{iss}	$f = 500 \text{ kHz}$	0	800	0	25		56160		pF
Short-circuit output capacitance	C_{oss}							2820		
Reverse transfer capacitance	C_{rss}							96		
Diode forward voltage	V_{SD}		0		852	25		4,1		V

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{paste} = 5,2 \text{ W/mK}$ (PTM)						0,11		K/W
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Resistor (Gate)

Static

Resistance	R							0,167		Ω
Tolerance							-1		1	%
Temperature coefficient	tc							100		ppm/K



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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		22		kΩ
Deviation of R100	$\Delta_{R/R}$	$R_{100} = 1484 \Omega$				100	-5		5	%
Power dissipation	P					25		130		mW
Power dissipation constant	d					25		1,5		mW/K
B-value	$B_{(25/50)}$	Tol. $\pm 1 \%$						3962		K
B-value	$B_{(25/100)}$	Tol. $\pm 1 \%$						4000		K
Vincotech Thermistor Reference									I	

⁽¹⁾ Value at chip level

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



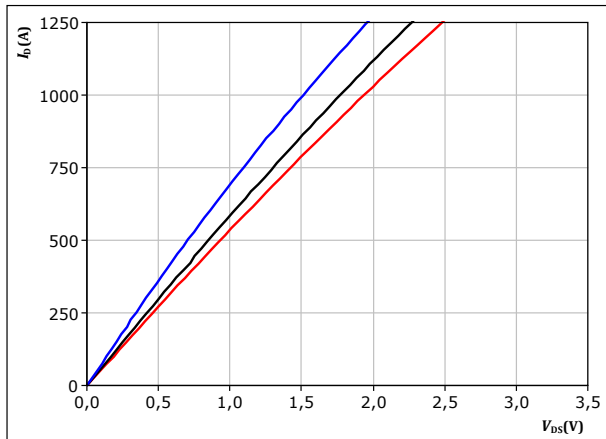
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AC Switch Characteristics

figure 1. MOSFET

Typical output characteristics

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



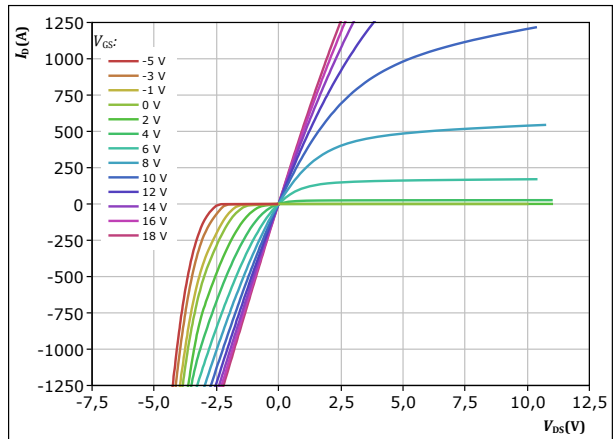
$t_p = 250 \mu s$
 $V_{GS} = 18 V$

T_j :
— 25 °C
— 125 °C
— 150 °C

figure 2. MOSFET

Typical output characteristics

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

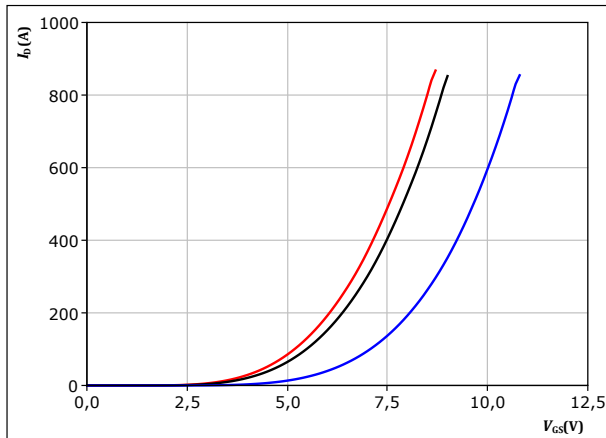


$t_p = 250 \mu s$
 $T_j = 150 ^\circ C$
 V_{GS} from -5 V to 18 V in steps of 2 V

figure 3. MOSFET

Typical transfer characteristics

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



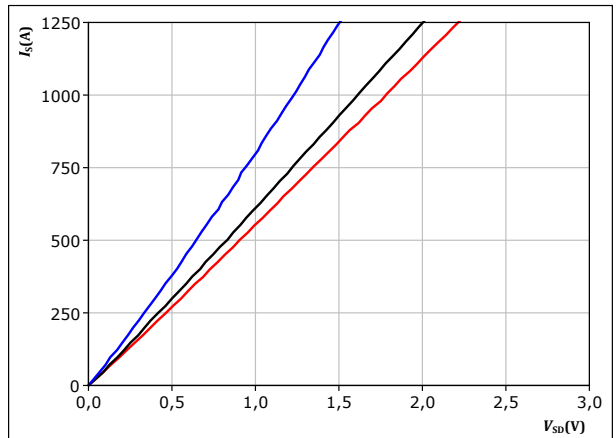
$t_p = 250 \mu s$
 $V_{DS} = 23 V$

T_j :
— 25 °C
— 125 °C
— 150 °C

figure 4. MOSFET

Typical reverse drain current characteristics

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



$t_p = 250 \mu s$
 $V_{GS} = 18 V$

T_j :
— 25 °C
— 125 °C
— 150 °C



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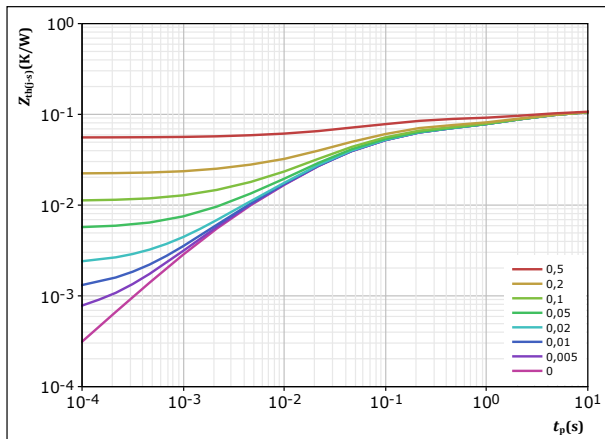
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AC Switch Characteristics

figure 5. MOSFET

Transient thermal impedance as a function of pulse width

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



$$D = \frac{t_p}{T}$$

$$R_{th(j-a)} = 0,107 \text{ K/W}$$

MOSFET thermal model values

R (K/W)	τ (s)
2,25E-02	7,05E+00
2,63E-02	1,49E+00
3,63E-02	9,26E-02
2,21E-02	1,95E-02
4,03E-03	2,49E-03



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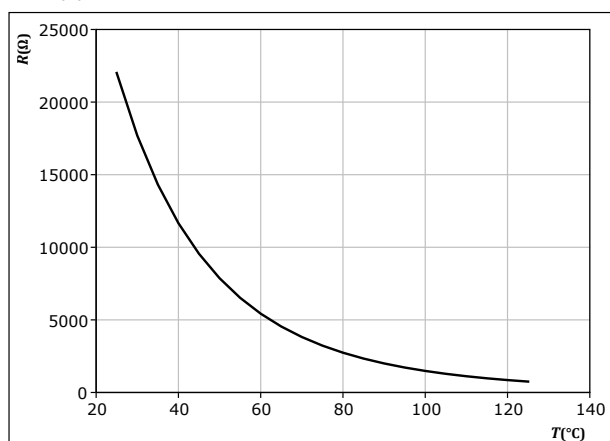
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Thermistor Characteristics

figure 6. Thermistor

Typical NTC characteristic as function of temperature



$$R_T = f(T)$$

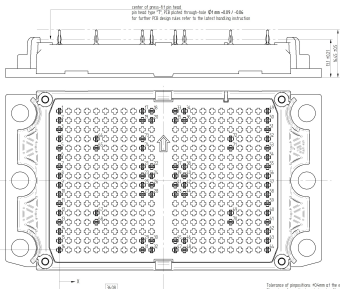




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Ordering Code	
Version	Ordering Code
Without thermal paste	30-EP12SAA001MS-PT59F77T
With thermal paste (5,2 W/mK, PTM6000HV)	30-EP12SAA001MS-PT59F77T-/7/

Marking							
<div><div>NN-NNNNNNNNNNNNN TTTTTWWYY UL VIN LLLLL SSSS</div><div></div><div></div></div>	Text	Name		Date code	UL & VIN	Lot	Serial
		NN-NNNNNNNNNNNNN- TTTTTV		WWYY	UL VIN	LLLLL	SSSS
	Datamatrix	Type&Ver	Lot number	Serial	Date code		
		TTTTTTVV	LLLLL	SSSS	WWYY		

Pin table [mm]								Outline	
Pin	X	Y	Function	38	43,36	28,8	CS		
1	0	48	L1	39	40,16	25,6	CS		
2	0	44,8	L1	40	43,36	25,6	CS		
3	0	41,6	L1	41	40,16	22,4	CS		
4	0	38,4	L1	42	43,36	22,4	CS		
5	0	35,2	L1	43	40,16	19,2	CS		
6	0	32	L1	44	43,36	19,2	CS		
7	0	28,8	L1	45	40,16	3,2	CS		
8	0	25,6	L1	46	43,36	3,2	CS		
9	0	22,4	L1	47	40,16	0	CS		
10	0	19,2	L1	48	43,36	0	CS		
11	0	16	L1	49	72,16	48	L2		
12	0	12,8	L1	50	72,16	44,8	L2		
13	0	9,6	L1	51	72,16	41,6	L2		
14	0	6,4	L1	52	72,16	38,4	L2		
15	0	3,2	L1	53	72,16	35,2	L2		
16	0	0	L1	54	72,16	32	L2		
17	28,8	48	CS	55	72,16	28,8	L2		
18	32	48	CS	56	72,16	25,6	L2		
19	28,8	44,8	CS	57	72,16	22,4	L2		
20	32	44,8	CS	58	72,16	19,2	L2		
21	28,8	28,8	CS	59	72,16	16	L2		
22	32	28,8	CS	60	72,16	12,8	L2		
23	28,8	25,6	CS	61	72,16	9,6	L2		
24	32	25,6	CS	62	72,16	6,4	L2		
25	28,8	22,4	CS	63	72,16	3,2	L2		
26	32	22,4	CS	64	72,16	0	L2		
27	28,8	19,2	CS	65	12,8	35,2	G11-1		
28	32	19,2	CS	66	12,8	38,4	S11-1		
29	28,8	3,2	CS	67	12,8	12,8	G11-2		
30	32	3,2	CS	68	12,8	9,6	S11-2		
31	28,8	0	CS	69	59,36	12,8	G12-1		
32	32	0	CS	70	59,36	9,6	S12-1		
33	40,16	48	CS	71	59,36	35,2	G12-2		
34	43,36	48	CS	72	59,36	38,4	S12-2		
35	40,16	44,8	CS	73	28,8	38,4	Therm1		
36	43,36	44,8	CS	74	28,8	35,2	Therm2		
37	40,16	28,8	CS						

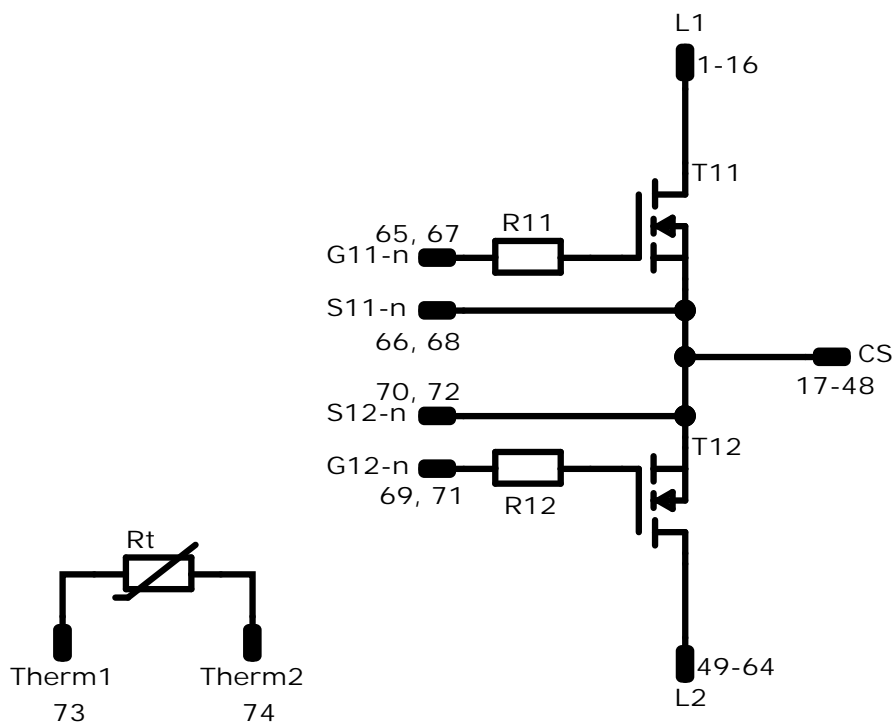


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Pinout



n=1-2 See exact Pin numbers and Pin functions on Outline

Identification

ID	Component	Voltage	Current	Function	Comment
T11, T12	MOSFET	1200 V	1,42 mΩ	AC Switch	Parallel devices with separate control. Values apply to complete device.
R11, R12	Resistor			Resistor (Gate)	
Rt	Thermistor			Thermistor	



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Packaging instruction				
Standard packaging quantity (SPQ) 24	>SPQ	Standard	<SPQ	Sample

Handling instruction
Handling instructions for <i>flow</i> E3BP packages see vincotech.com website.

Package data
Package data for <i>flow</i> E3BP 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 $T_{j,op}=175^{\circ}\text{C}$ and up to 3500VAC/1min isolation voltage. For more information see vincotech.com website.



Document No.:	Date:	Modification:	Pages
30-EP12SAA001MS-PT59F77T-D1-14	8 May. 2026	Initial Release	

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