SKM 121AR MOSFET TRANSISTOR

SEMITRANS™ M1

Power MOSFET Modules

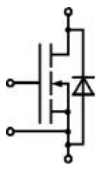
SKM 121AR

Features

- N Channel, enhancement mode
- Avalanche characteristics
- Short internal connections avoid oscillations
- Isolated copper baseplates
- All electrical connections on top for easy busbaring
- Large clearance (10mm) and creepage distances (13mm)
- UL recognized, file no. E 63 532

Typical Applications*

- Switched mode power supplies
- DC servo and robot drives
- DC choppers
- UPS equipment
- Plasma cutting
- Not suitable for linear amplification



MA

Absolute Maximum Ratings		T_c = 25 °C, unless otherwise specified	
Symbol	**Conditions**	**Values**	**Units**
V_{DS}		200	V
I_D	T_s = 25 (80) °C	130 (95)	A
I_{DM}	1 ms	390	A
V_{GS}		± 20	V
T_{vj}, (T_{stg})		- 40 ... + 150 (125)	°C
V_{isol}	AC, 1 min.	2500	V
Inverse diode			
I_F = - I_S		130	A
I_{FM} = - I_{SM}		390	A

Characteristics				T_c = 25 °C, unless otherwise specified	
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Units**
$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 0,25 mA	200			V
$V_{GS(th)}$	V_{GS} = V_{DS}, I_D = 1 mA	2,1	3	4	V
I_{DSS}	V_{GS} = 0 V, V_{DS} = 200 V, T_j = 25 (125) °C		50 (300)	250 (1000)	µA
I_{GSS}	V_{GS} = 20 V, V_{DS} = 0 V		10	100	nA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 80 A		18	20	mΩ
g_{fs}	V_{DS} = 25 V, I_D = 80 A	60	75		S
C_{CHC}	V_{GS} = 0, V_{DS} = 25 V, f = 1 MHz			160	pF
C_{iss}			10	13	nF
C_{oss}			3	4,5	nF
C_{rss}			0,7	1	nF
L_{DS}				20	nH
$t_{d(on)}$	V_{DD} = 100 V, I_D = 80 A,		60		ns
t_r	V_{GS} = = 10 V, R_G = 3,3 Ω		60		ns
$t_{d(off)}$			240		ns
t_f			70		ns
Inverse diode					
V_{SD}	I_F = 260 A; V_{GS} = 0 V		1,05	1,4	V
t_{rr}	T_j = 25 (150) °C		400		ns
Q_{rr}	T_j = 25 °C		4,3		µC
I_{rr}	T_j = °C				A
Thermal characteristics					
$R_{th(j-c)}$	per MOSFET			0,18	K/W
$R_{th(c-s)}$	M_s, surface 10 µm, per module			0,05	K/W
Mechanical data					
M_s	to heatsink (M6)	4		5	Nm
M_t	for terminals (M5)	2,5		3,5	Nm
w				130	g

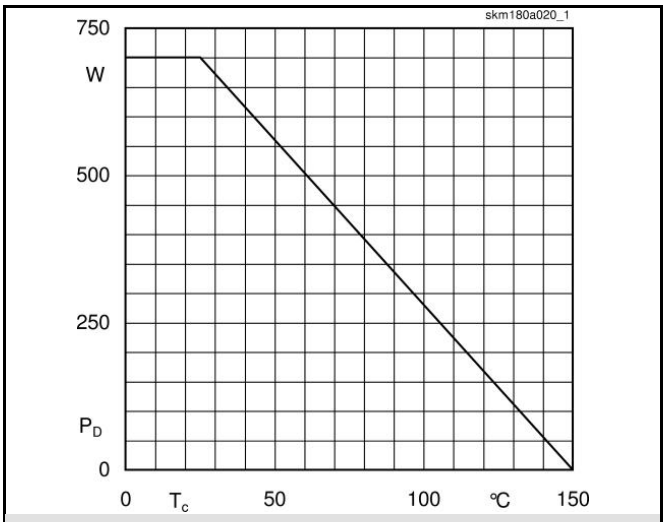


Fig. 1 Rated power dissipation vs. temperature

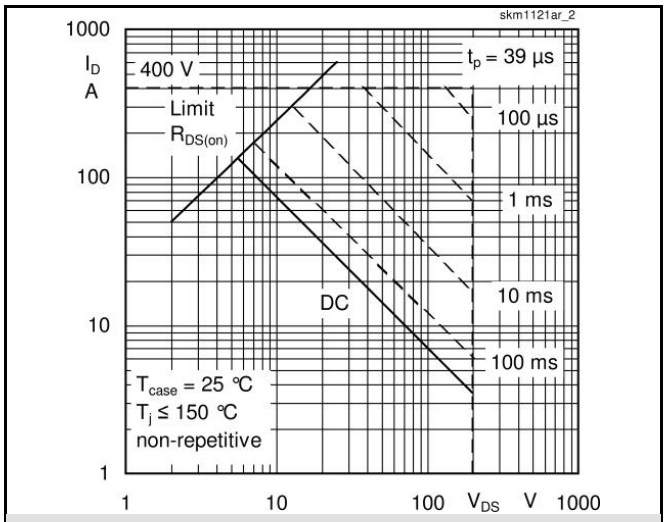


Fig. 2 Maximum safe operating area

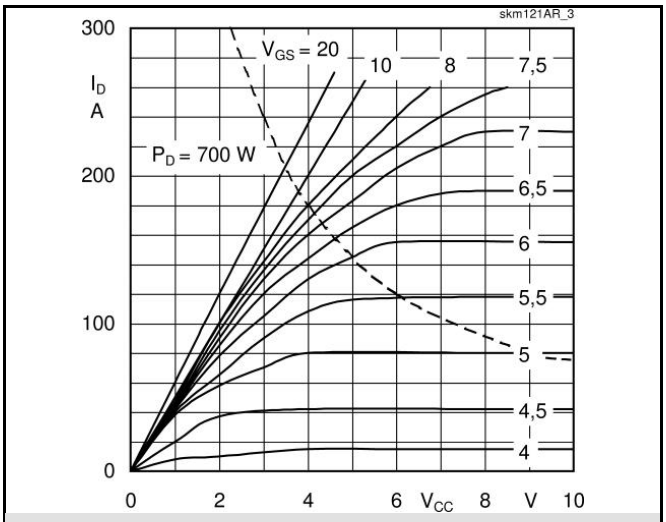


Fig. 3 Output characteristic

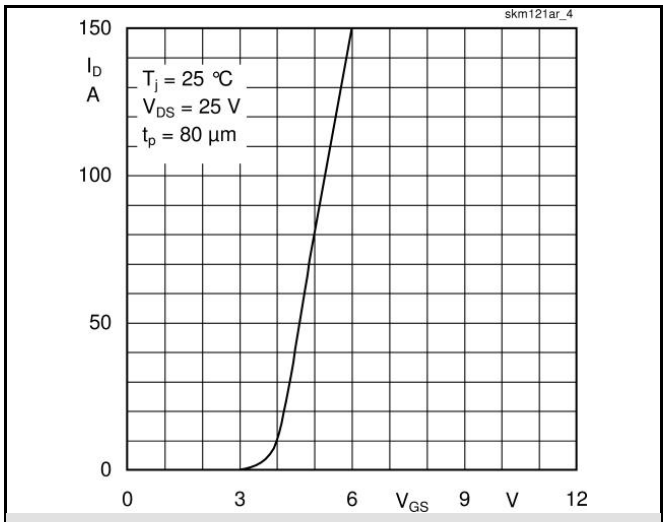


Fig. 4 Transfer characteristic

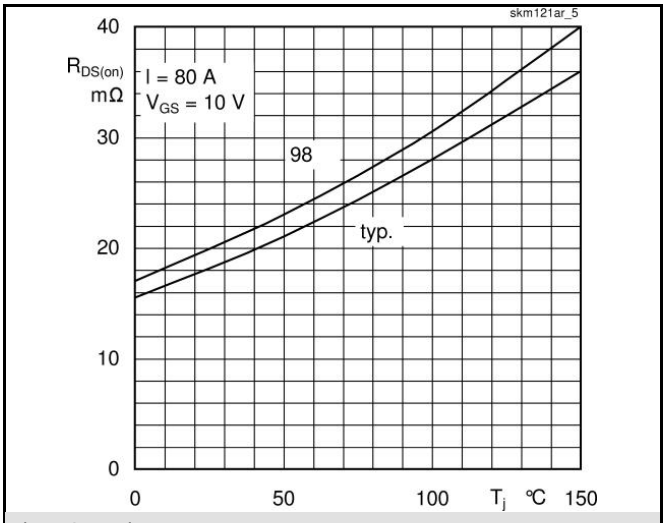


Fig. 5 On-resistance vs. temperature

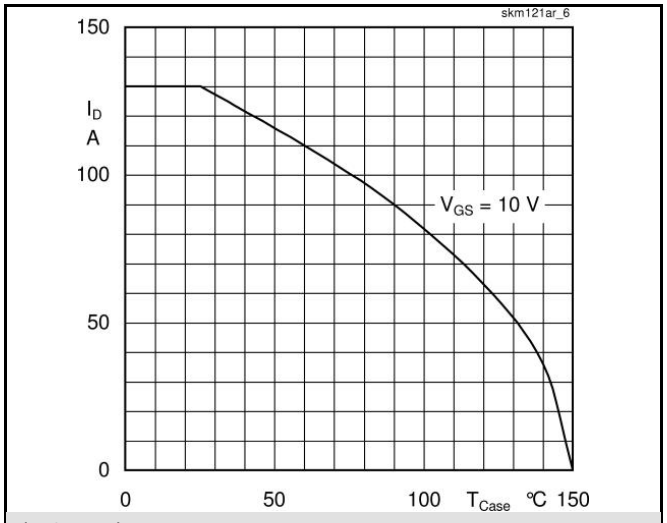


Fig. 6 Rated current vs. temperature

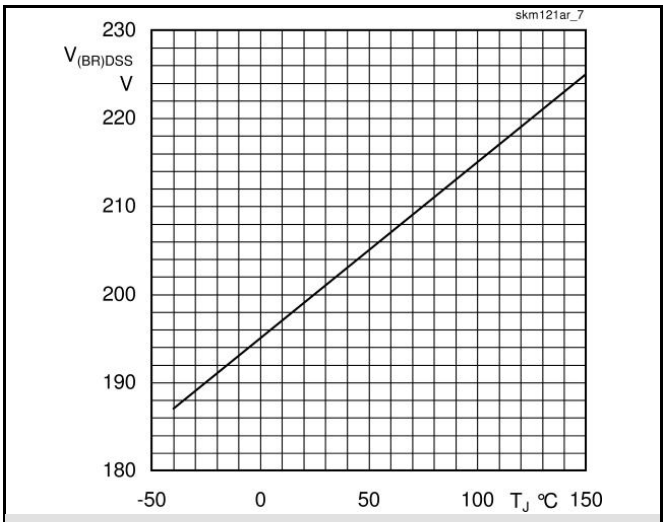


Fig. 7 Breakdown voltage vs. temperature

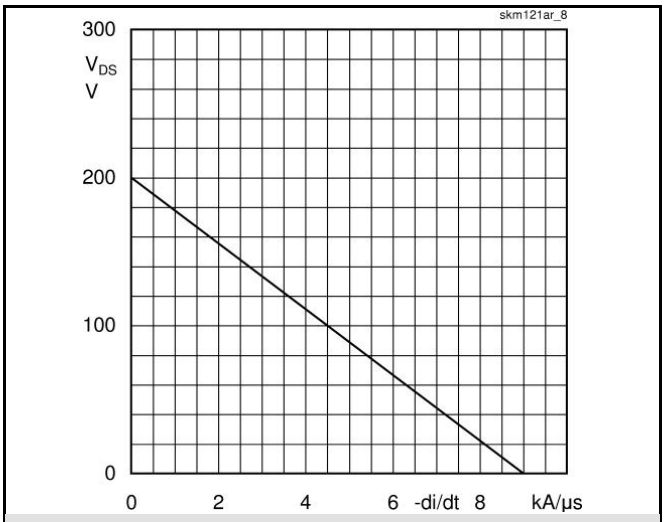


Fig. 8 Drain-source voltage derating

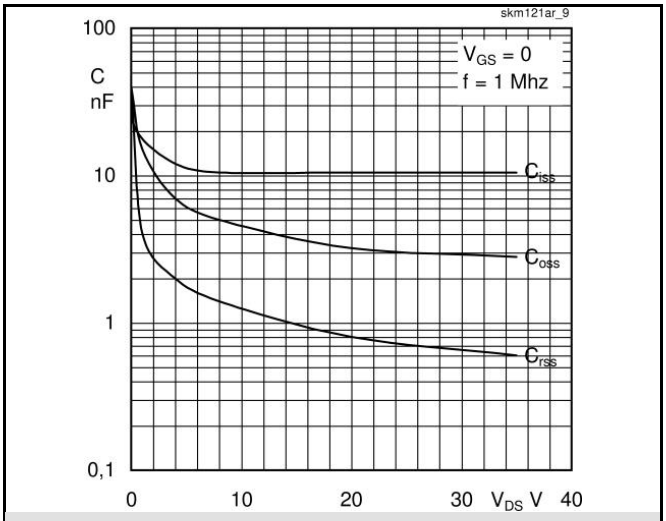


Fig. 9 Capacitances vs. drain-source voltage

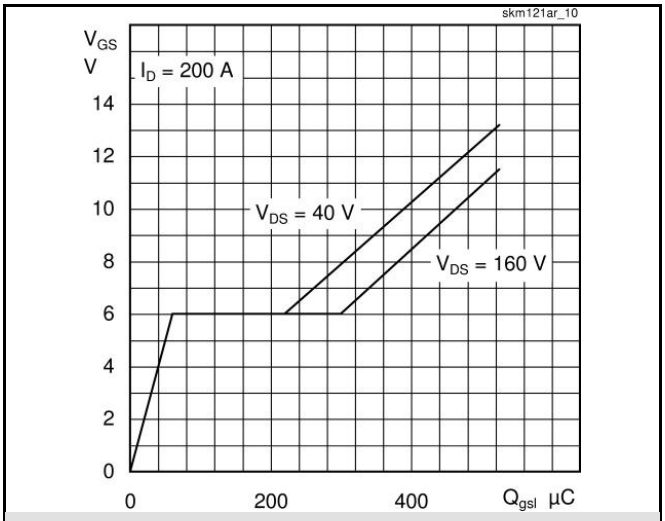
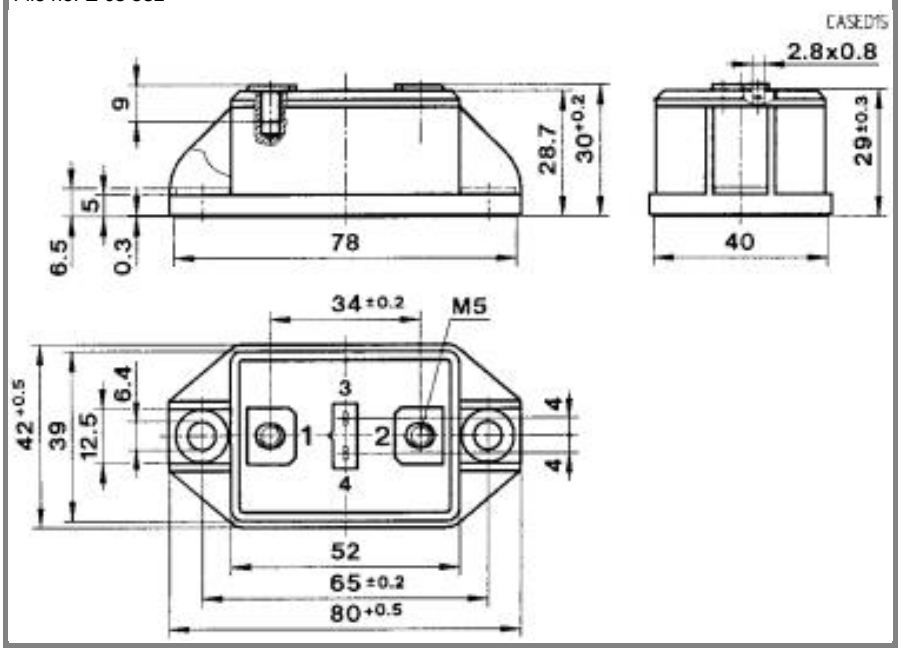


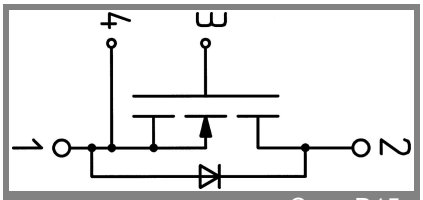
Fig. 10 Gate charge characteristic

UL Recognized
File no. E 63 532

Dimensions in mm



Case D 15



Case D15

This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.

