SKM 453A020

SEMITRANS™ M3

Power MOSFET Modules

SKM 453A020

Features

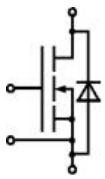
- N Channel, enhancement mode
- Avalanche characteristic
- Short internal connectionons avoid oscillations
- Isolated copper baseplate using Al_2O_3 ceramic Direct Copper Bonding Technology (DCB)
- All electrical connections on top for easy busbaring
- Large clearances (12 mm) and creepage distances (20 mm)

Typical Applications

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

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	450 (400)	A
I_{DM}	1 ms	1350	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		450	A
I_{FM} = - I_{SM}		1600	A

Characteristics		T_c = 25 °C, unless otherwise specified			
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Units**
$V_{(BR)DSS}$	V_{GS} = 0 V, I_D = 0,5 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			250 (2500)	µA
I_{GSS}	V_{GS} = 20 V, V_{DS} = 0 V			100	nA
$R_{DS(on)}$	V_{GS} = 10 V, I_D = 300 A		3,8	4,3	mΩ
g_{fs}	V_{DS} = 25 V, I_D = 300 A		400		S
C_{CHC}	V_{GS} = 0, V_{DS} = 25 V, f = 1 MHz		250		pF
C_{iss}			67	78	nF
C_{oss}			13	15	nF
C_{rss}			5	7	nF
L_{DS}				20 (60)	nH
$t_{d(on)}$	V_{DD} = 30 V, I_D = 300 A,		100		ns
t_r	V_{GS} = = 10 V, R_G = 2 Ω		100		ns
$t_{d(off)}$			700		ns
t_f			250		ns
Inverse diode					
V_{SD}	I_F = 600 A; V_{GS} = 0 V			1,5	V
t_{rr}	T_j = 25 (150) °C		160		ns
Q_{rr}	T_j = 25 °C		25		µC
I_{rr}	T_j = 150 °C				A
Thermal characteristics					
$R_{th(j-c)}$	per MOSFET			0,06	K/W
$R_{th(c-s)}$	M_s, surface , per module			0,038	K/W
Mechanical data					
M_s	to heatsink (M6)	3		5	Nm
M_t	for terminals (M5)	2,5		5	Nm
w				325	g



MA

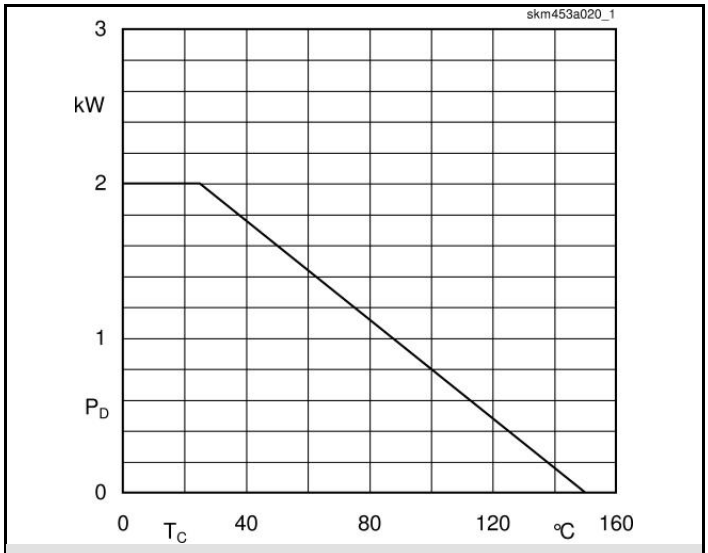


Fig. 1 Rated power disipation vs. temperature

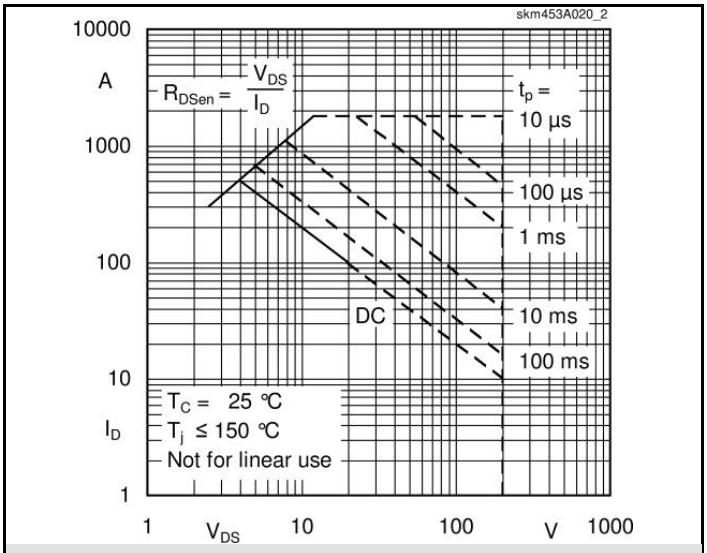


Fig. 2 Maximum safe operating area

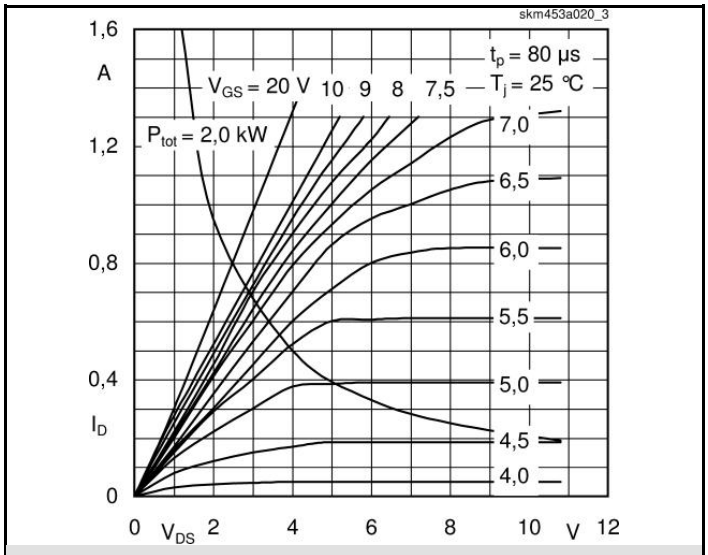


Fig. 3 Output characteristic

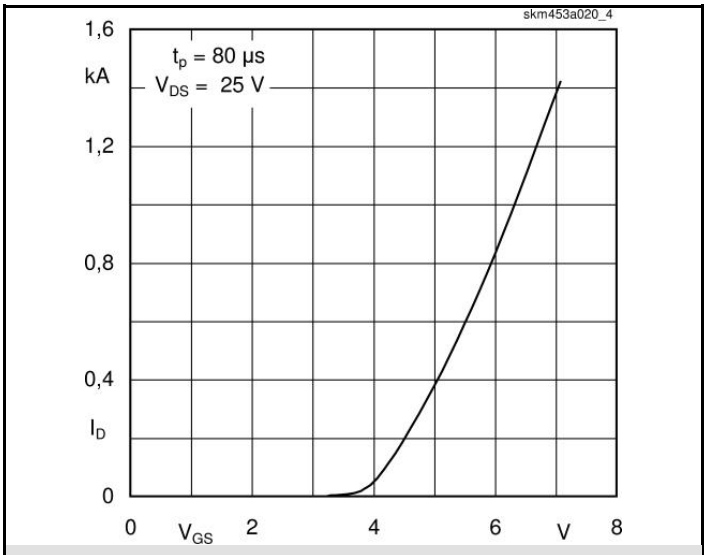


Fig. 4 Transfer characteristic

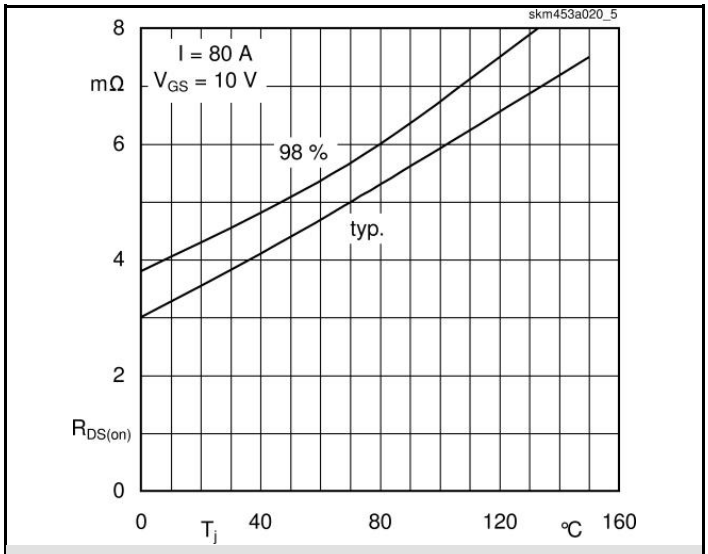


Fig. 5 On-resistance vs. temperature

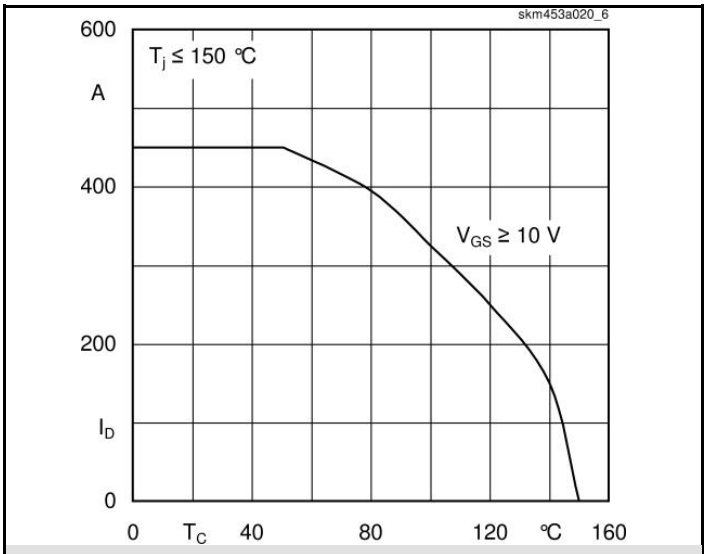


Fig. 6 Rated current vs. temperature

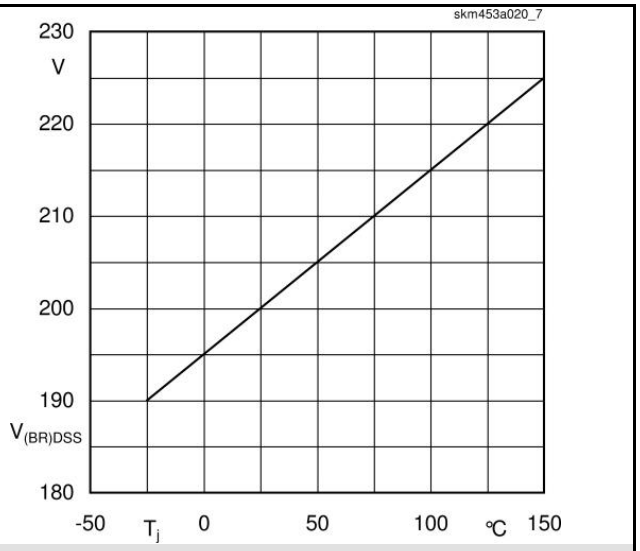


Fig. 7 Breakdown voltage vs. temperature

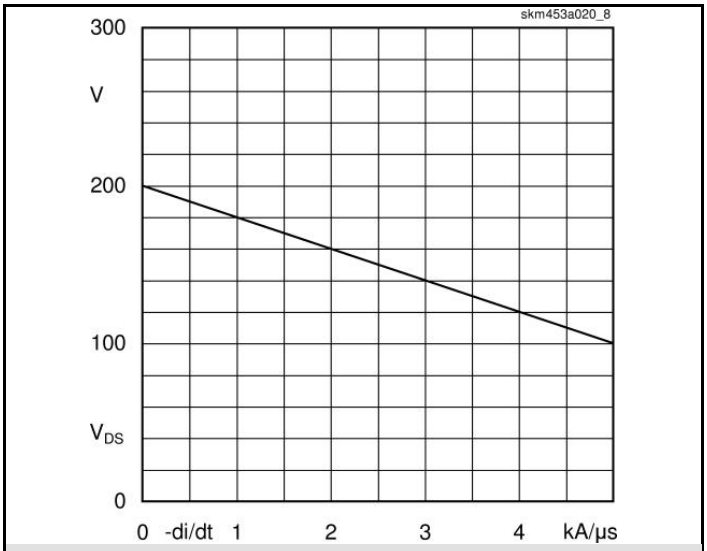


Fig. 8 Drain-source voltage derating

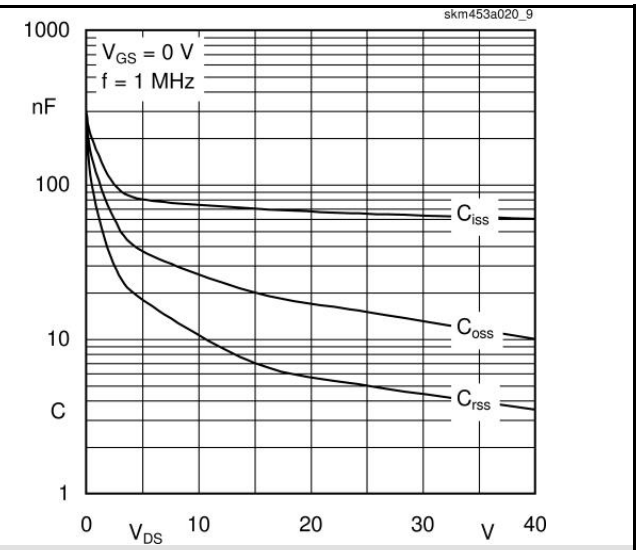


Fig. 9 Capacitances vs. drain-source voltage

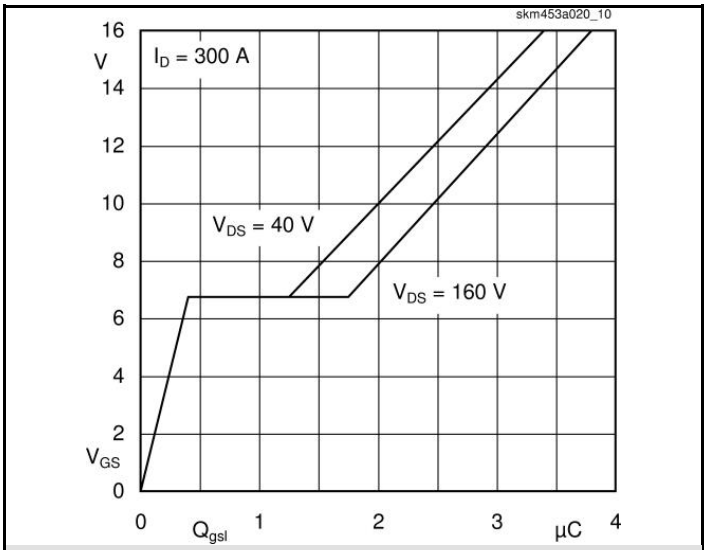


Fig. 10 Gate charge characteristic

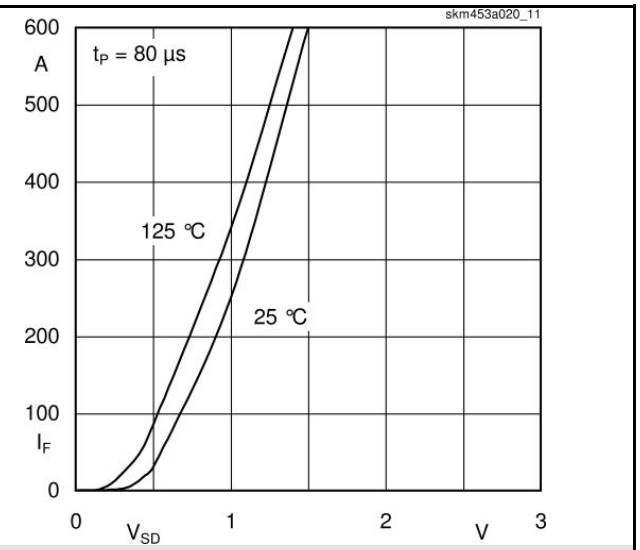


Fig. 11 Diode forward characteristic

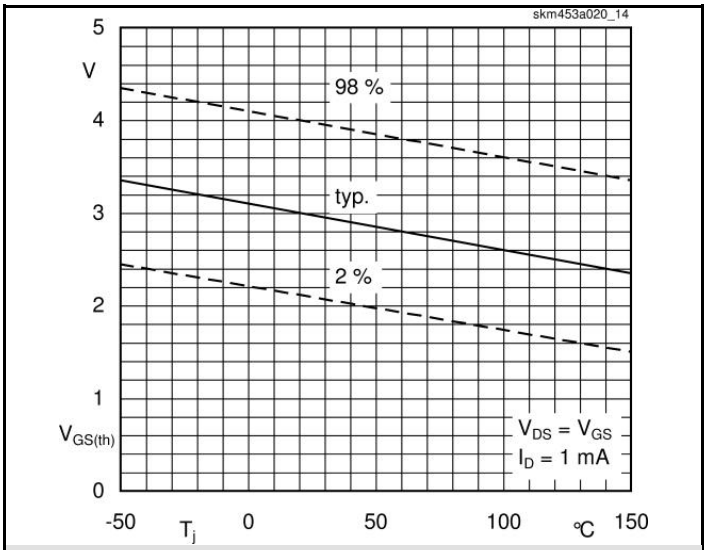


Fig. 14 Gate-source threshold voltage

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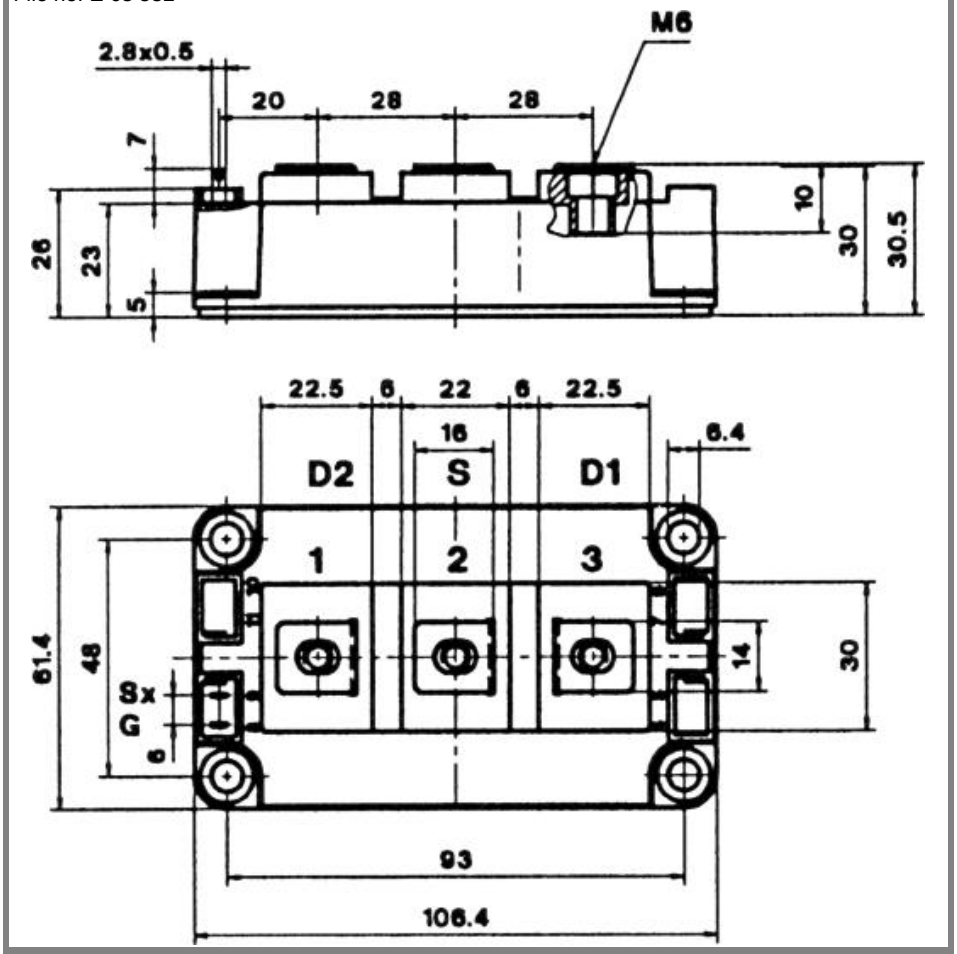
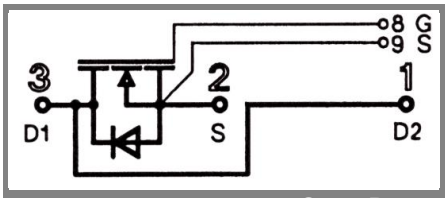
UL Recognized
File no. E 63 532

Dimensions in mm



Case D 71



Case D 71

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

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