

SKM 453A020



SEMITRANS™ M3

Power MOSFET Modules

SKM 453A020

Features

- N Channel, enhancement mode
- Avalanche characteristic
- Short internal connections avoid oscillations
- Isolated copper baseplate using Al₂O₃ 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



MA

Absolute Maximum Ratings		$T_c = 25\text{ °C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
V_{DS}		200	V
I_D	$T_s = 25\text{ (80) °C}$	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		$T_c = 25\text{ °C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}$, $I_D = 0,5\text{ mA}$	200			V
$V_{GS(th)}$	$V_{GS} = V_{DS}$, $I_D = 1\text{ mA}$	2,1	3	4	V
I_{DSS}	$V_{GS} = 0\text{ V}$, $V_{DS} = 200\text{ V}$, $T_j = 25\text{ (125) °C}$			250 (2500)	μA
I_{GSS}	$V_{GS} = 20\text{ V}$, $V_{DS} = 0\text{ V}$			100	nA
$R_{DS(on)}$	$V_{GS} = 10\text{ V}$, $I_D = 300\text{ A}$		3,8	4,3	m Ω
g_{fs}	$V_{DS} = 25\text{ V}$, $I_D = 300\text{ A}$		400		S
C_{CHC}	$V_{GS} = 0$, $V_{DS} = 25\text{ V}$, $f = 1\text{ MHz}$		250		pF
C_{iss}			67	78	nF
C_{oss}			13	15	nF
C_{rss}			5	7	nF
L_{DS}				20 (60)	nH
$t_{d(on)}$	$V_{DD} = 30\text{ V}$, $I_D = 300\text{ A}$,		100		ns
t_r	$V_{GS} = 10\text{ V}$, $R_G = 2\text{ }\Omega$		100		ns
$t_{d(off)}$			700		ns
t_f			250		ns
Inverse diode					
V_{SD}	$I_F = 600\text{ A}$; $V_{GS} = 0\text{ V}$			1,5	V
t_{rr}	$T_j = 25\text{ (150) °C}$		160		ns
Q_{rr}	$T_j = 25\text{ °C}$		25		μC
I_{rr}	$T_j = 150\text{ °C}$				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

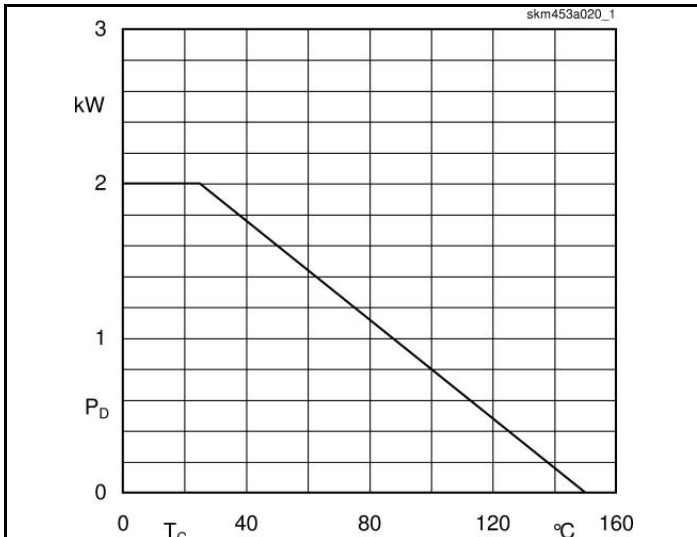


Fig. 1 Rated power dissipation vs. temperature

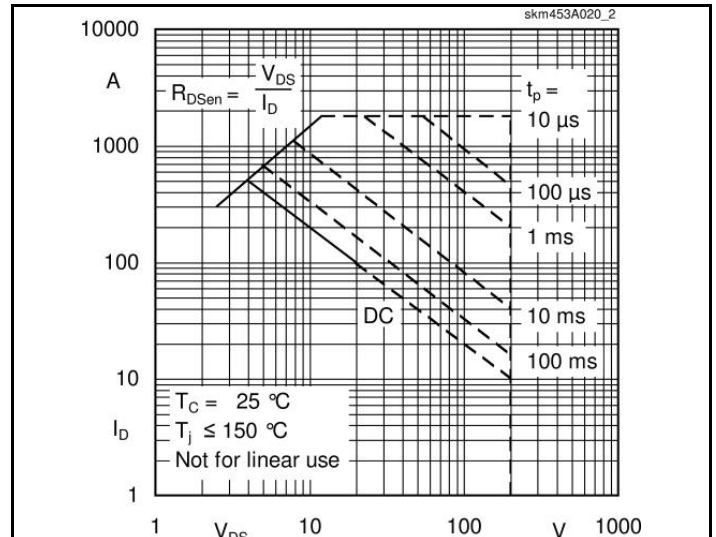


Fig. 2 Maximum safe operating area

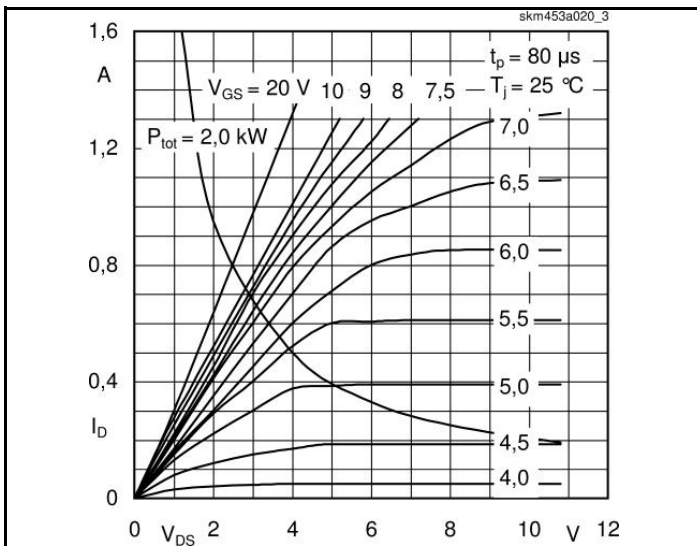


Fig. 3 Output characteristic

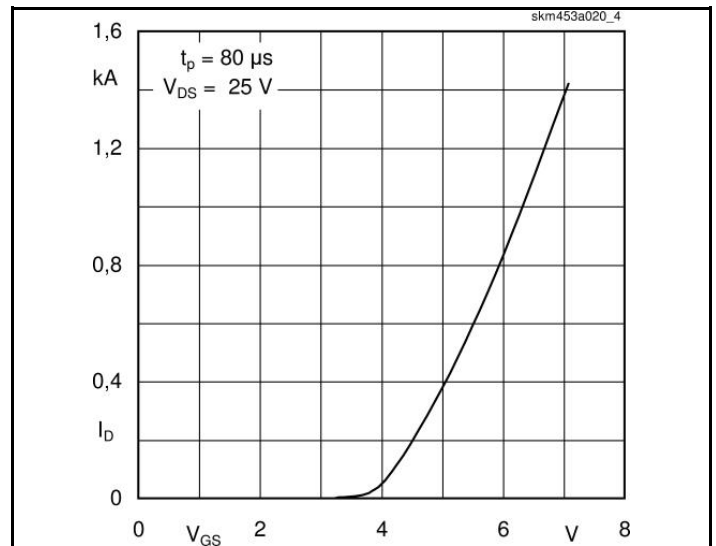


Fig. 4 Transfer characteristic

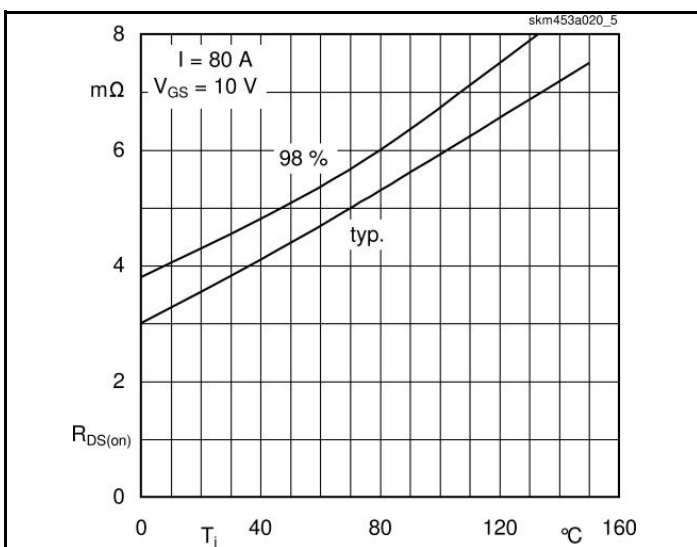


Fig. 5 On-resistance vs. temperature

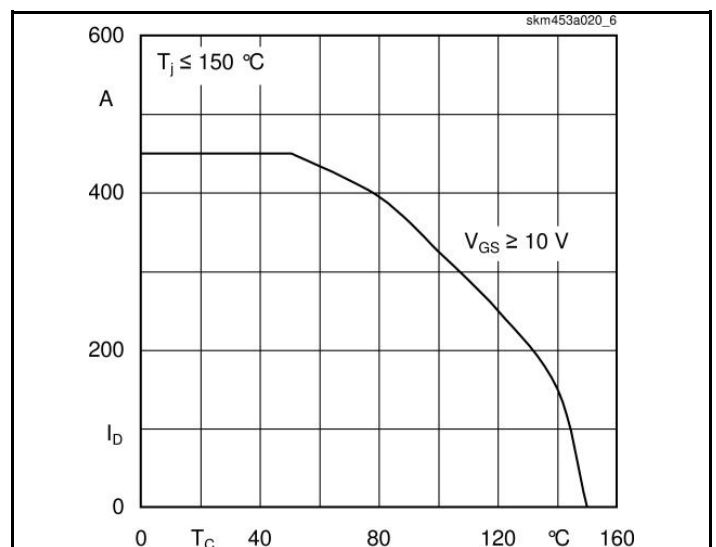
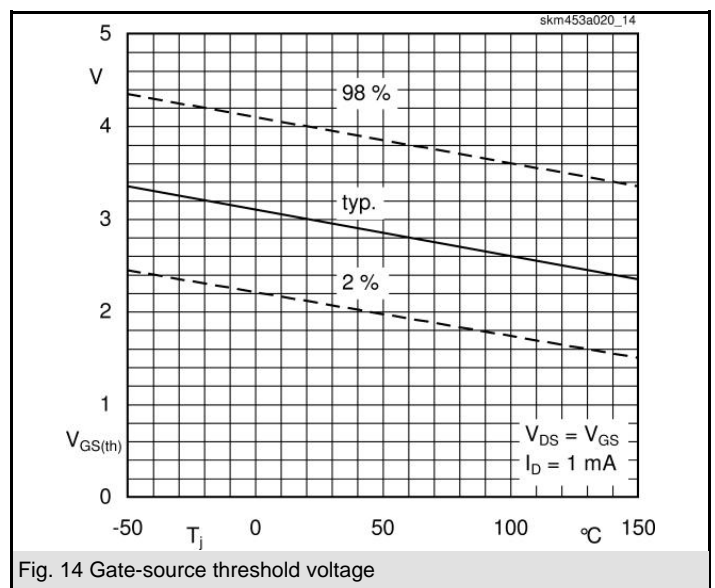
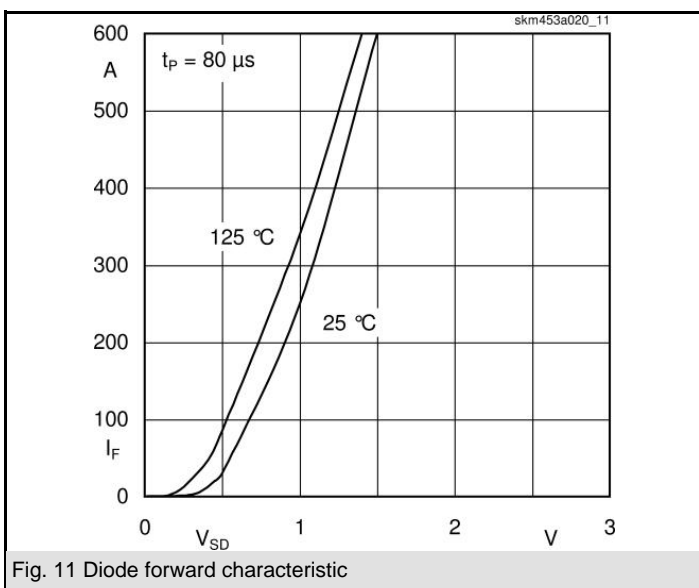
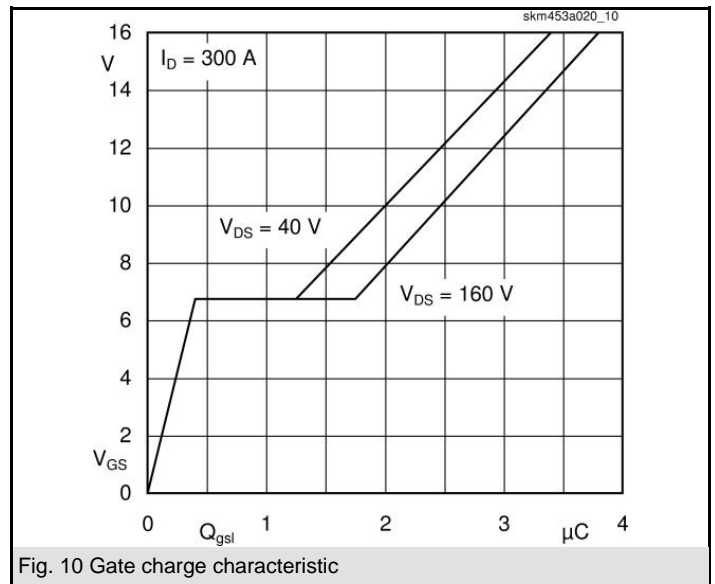
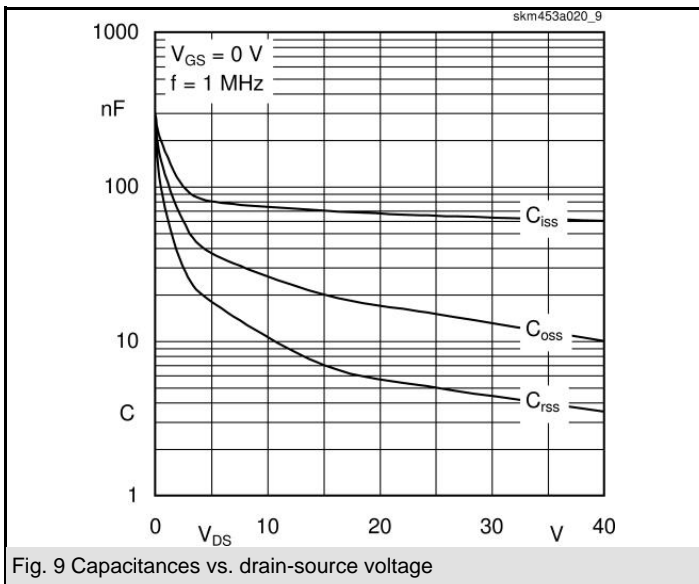
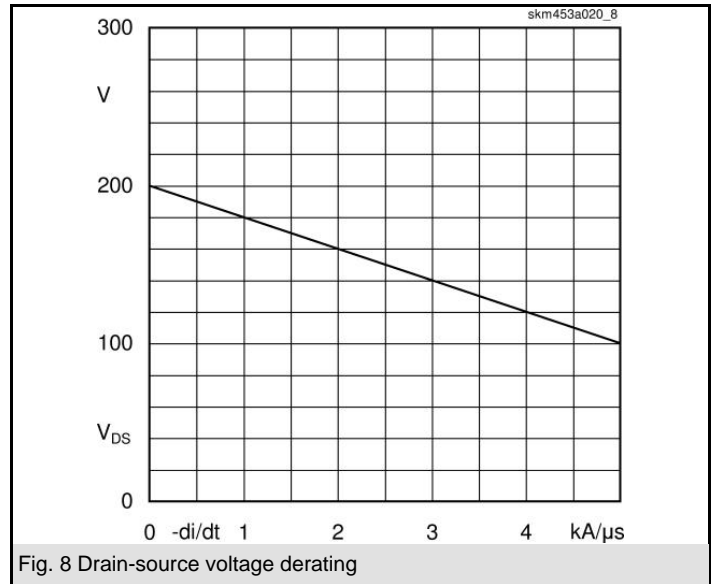
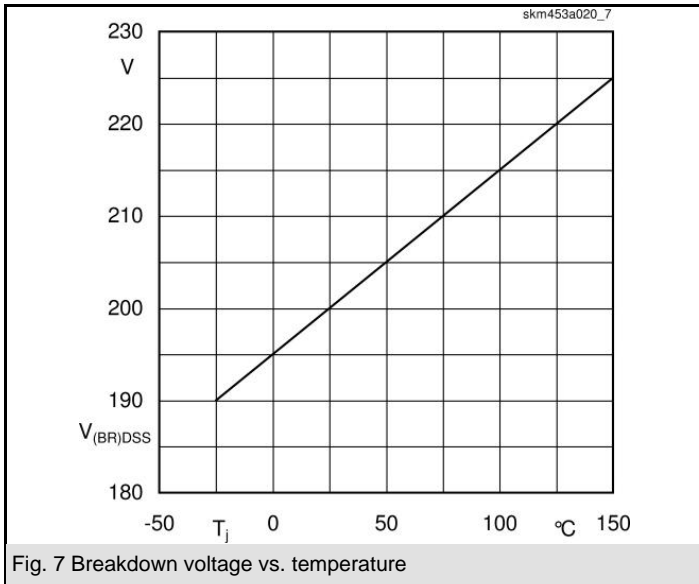


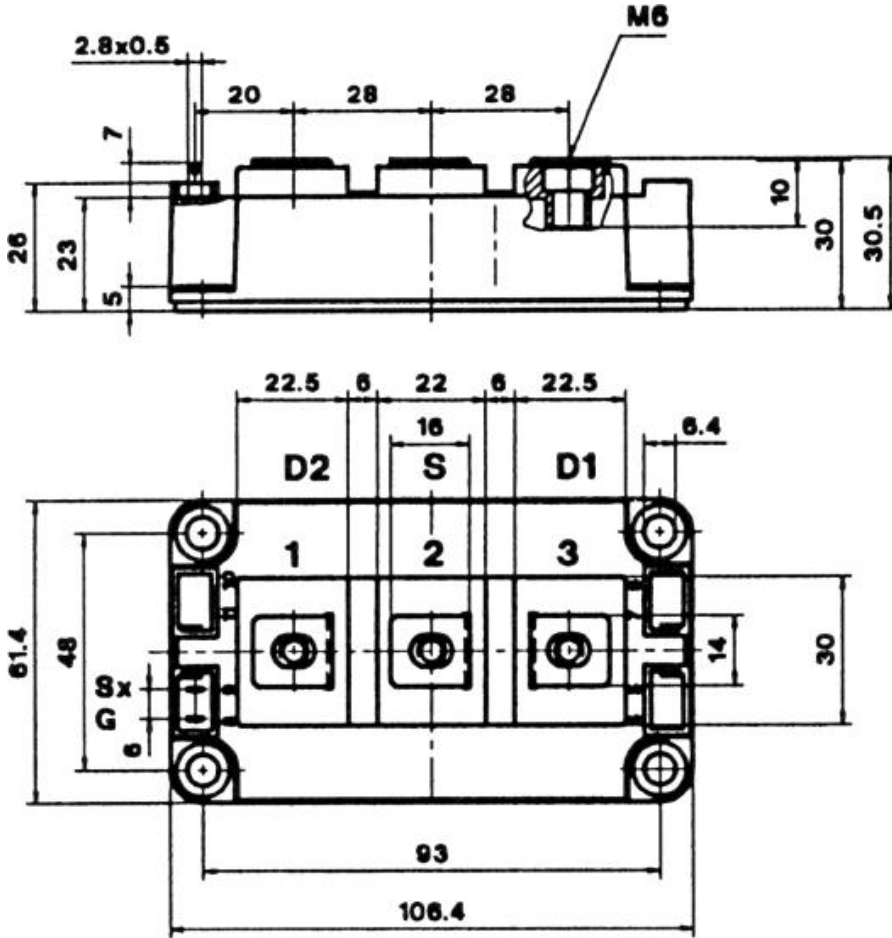
Fig. 6 Rated current vs. temperature



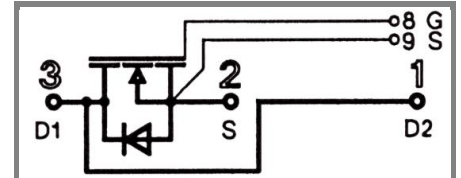
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UL Recognized
File no. E 63 532

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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