

SKM 500GA128D



SEMITRANS® 4

SPT IGBT Modules

SKM 500GA128D

Features

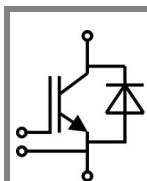
- SPT = Soft-Punch-Through technology
- V_{CEsat} with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications

- AC inverter drives
- UPS
- Electronic welders at f_{sw} up to 20 kHz

Remarks

- $I_{DC} \leq 500 \text{ A}$ for $T_{Terminal} = 100 \text{ }^\circ\text{C}$



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Absolute Maximum Ratings		$T_c = 25 \text{ }^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values	Units	
IGBT				
V_{CES}	$T_j = 25 \text{ }^\circ\text{C}$	1200	V	
I_C	$T_j = 150 \text{ }^\circ\text{C}$	$T_c = 25 \text{ }^\circ\text{C}$	700	A
		$T_c = 80 \text{ }^\circ\text{C}$	500	A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	800	A	
V_{GES}		± 20	V	
t_{psc}	$V_{CC} = 600 \text{ V}; V_{GE} \leq 20 \text{ V}; T_j = 125 \text{ }^\circ\text{C}$ $V_{CES} < 1200 \text{ V}$	10	μs	
Inverse Diode				
I_F	$T_j = 150 \text{ }^\circ\text{C}$	$T_{case} = 25 \text{ }^\circ\text{C}$	530	A
		$T_{case} = 80 \text{ }^\circ\text{C}$	350	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$	800	A	
I_{FSM}	$t_p = 10 \text{ ms}; \sin.$	$T_j = 150 \text{ }^\circ\text{C}$	3600	A
Module				
$I_{t(RMS)}$		500	A	
T_{vj}		- 40... + 150	$^\circ\text{C}$	
T_{stg}		- 40... + 125	$^\circ\text{C}$	
V_{isol}	AC, 1 min.	4000	V	

Characteristics		$T_c = 25 \text{ }^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}; I_C = 16 \text{ mA}$	4,5	5,5	6,5	V
I_{CES}	$V_{GE} = 0 \text{ V}; V_{CE} = V_{CES}$	$T_j = 25 \text{ }^\circ\text{C}$	0,2	0,6	mA
		$T_j = 125 \text{ }^\circ\text{C}$	0,9	1,05	V
V_{CE0}			1	1,15	V
r_{CE}	$V_{GE} = 15 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}$	2,3	3	$\text{m}\Omega$
		$T_j = 125 \text{ }^\circ\text{C}$	3	3,8	$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 400 \text{ A}; V_{GE} = 15 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	1,9	2,35	V
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	2,1	2,55	V
C_{ies}	$V_{CE} = 25; V_{GE} = 0 \text{ V}$	$f = 1 \text{ MHz}$	35		nF
C_{oes}			4		nF
C_{res}			4		nF
Q_G	$V_{GE} = -8\text{V} \dots +20\text{V}$		4850		nC
R_{Gint}	$T_j = \text{ }^\circ\text{C}$		1		Ω
$t_{d(on)}$	$R_{Gon} = 4 \text{ } \Omega$	$V_{CC} = 600\text{V}$ $I_{Cnom} = 400\text{A}$	130		ns
t_r			80		ns
E_{on}			37		mJ
$t_{d(off)}$	$R_{Goff} = 4 \text{ } \Omega$	$T_j = 125 \text{ }^\circ\text{C}$ $V_{GE} = -15\text{V}$	880		ns
t_f			80		ns
E_{off}			48		mJ
$R_{th(j-c)}$	per IGBT			0,047	K/W



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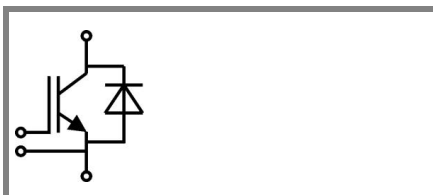
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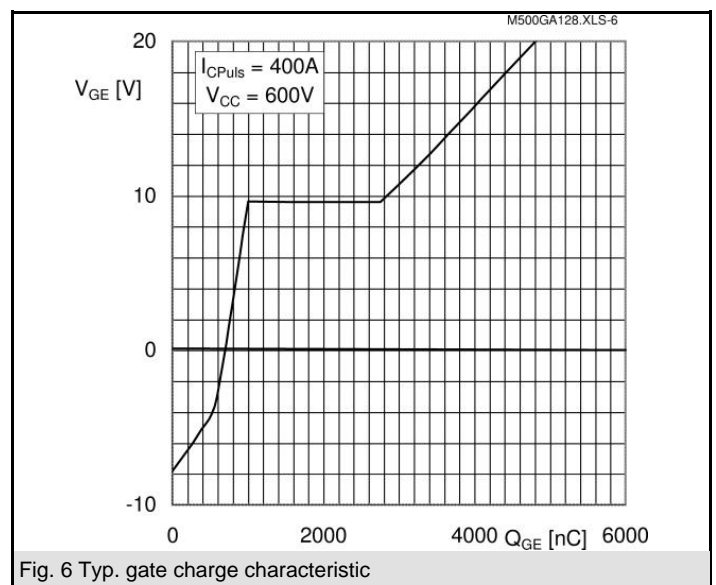
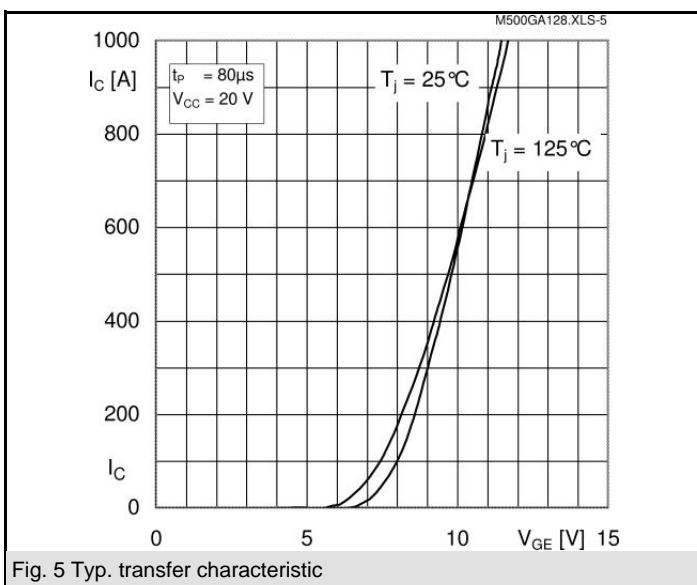
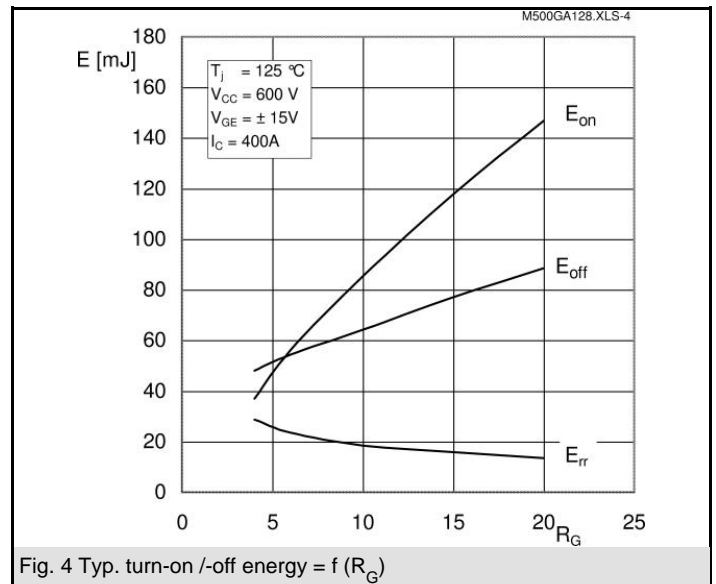
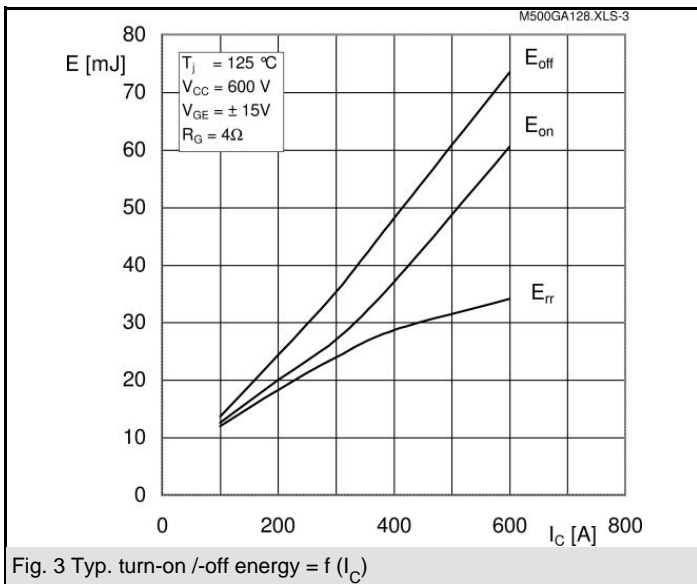
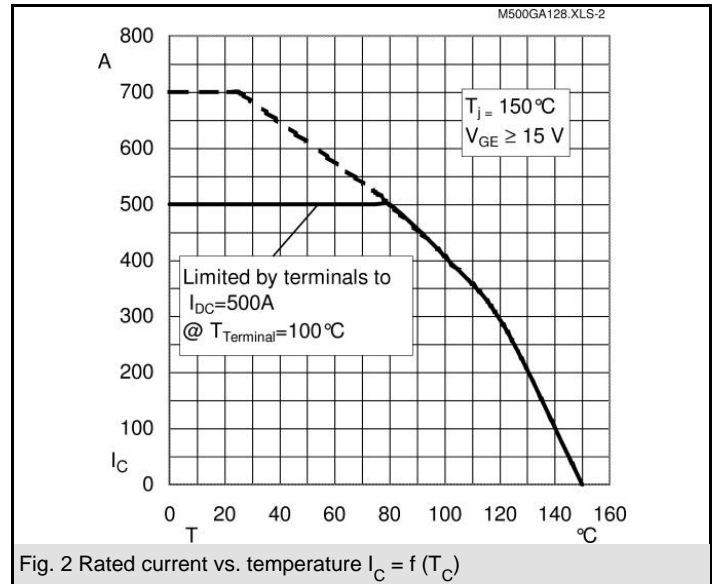
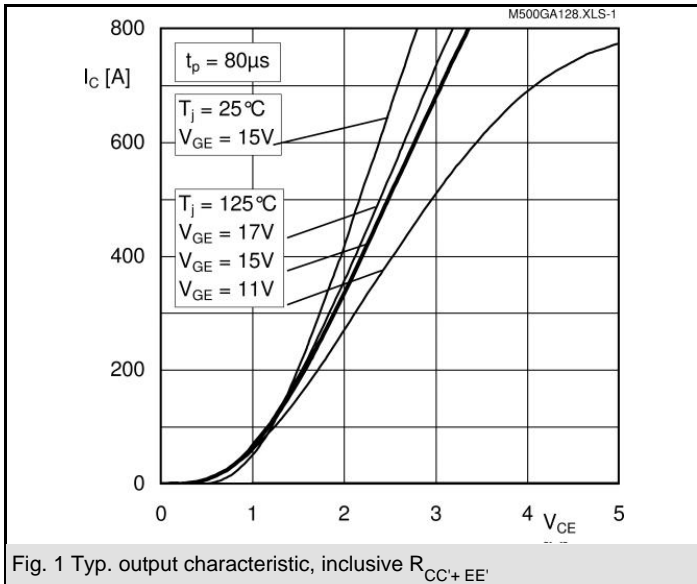
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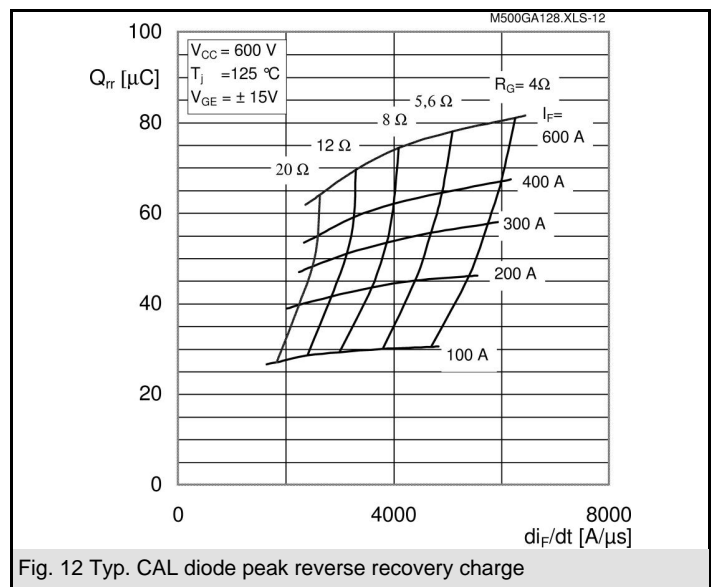
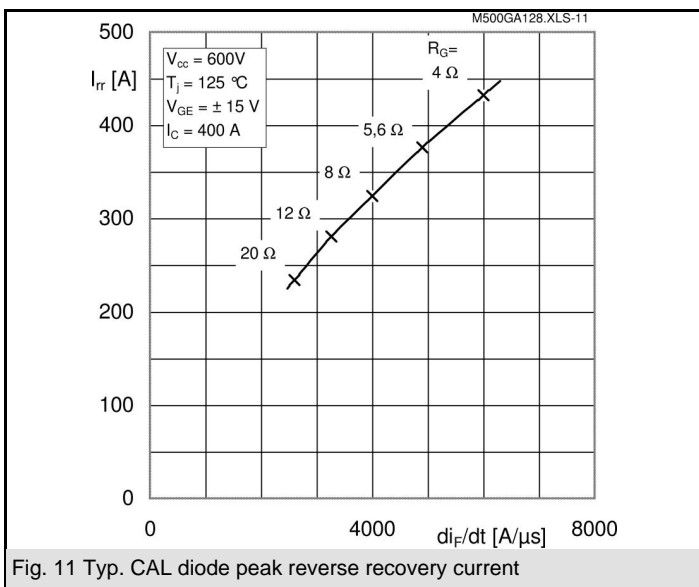
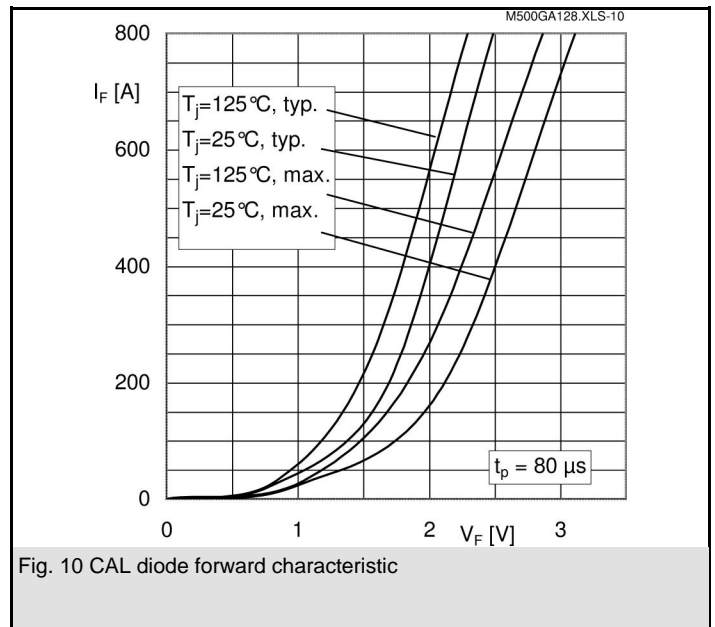
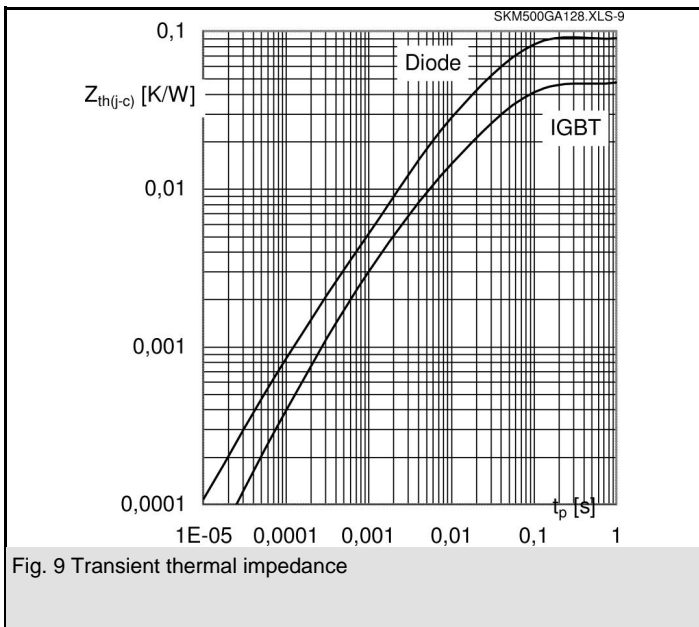
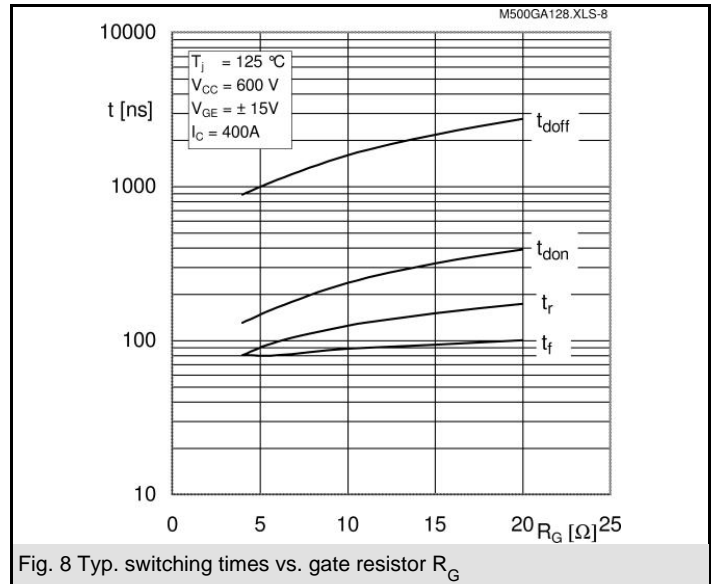
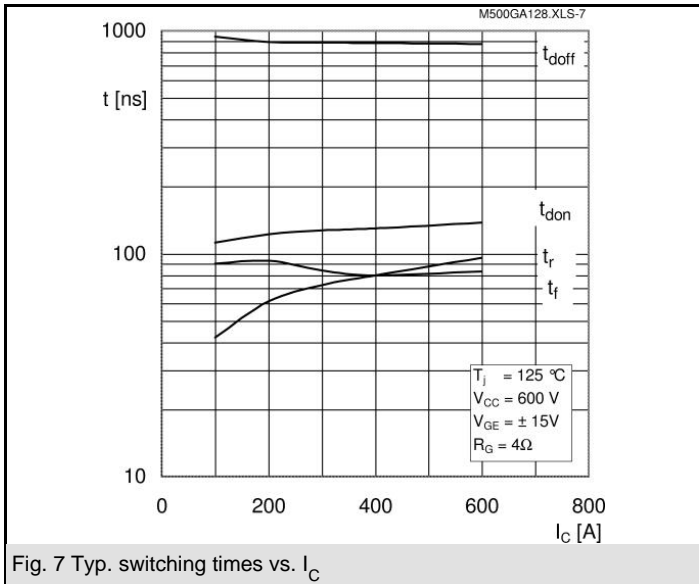
Characteristics

Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 400 \text{ A}; V_{GE} = 0 \text{ V}$		2	2,5	V
			1,8		V
					$T_j = 25 \text{ °C}_{chiplev.}$
					$T_j = 125 \text{ °C}_{chiplev.}$
V_{F0}			1,1	1,2	V
r_F			2,3	3,3	mΩ
					$T_j = 25 \text{ °C}$
I_{RRM}	$I_{Fnom} = 400 \text{ A}$		430		A
Q_{rr}	$di/dt = 6000 \text{ A}/\mu\text{s}$		67		μC
E_{rr}	$V_{GE} = -15 \text{ V}; V_{CC} = 600 \text{ V}$		29		mJ
$R_{th(j-c)D}$	per diode			0,09	K/W
Module					
L_{CE}			15	20	nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25 \text{ °C}$	0,18		mΩ
		$T_{case} = 125 \text{ °C}$	0,22		mΩ
$R_{th(c-s)}$	per module			0,038	K/W
M_s	to heat sink M6		3	5	Nm
M_t	to terminals M6 (M4)		2,5 (1,1)	5 (2)	Nm
w				330	g

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

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.



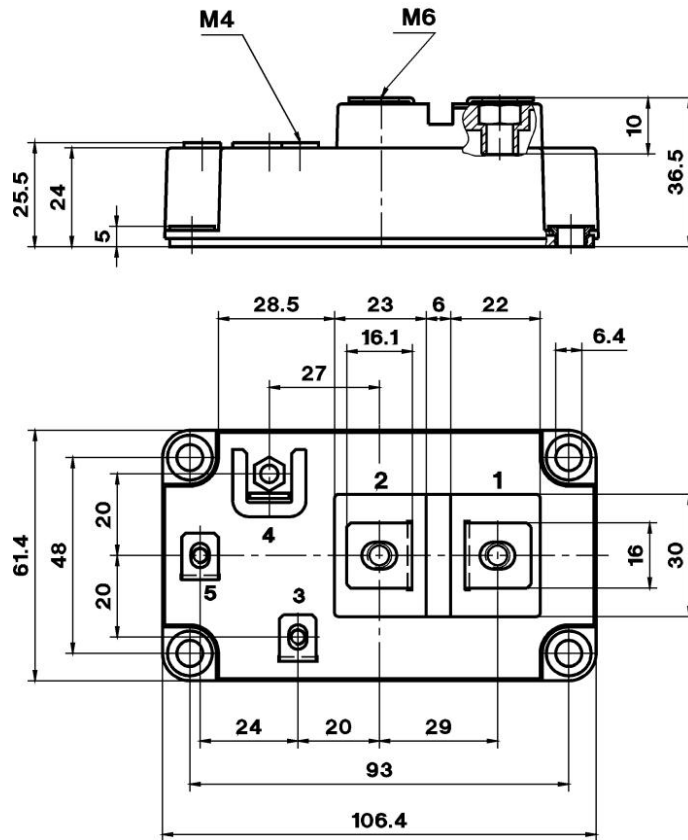


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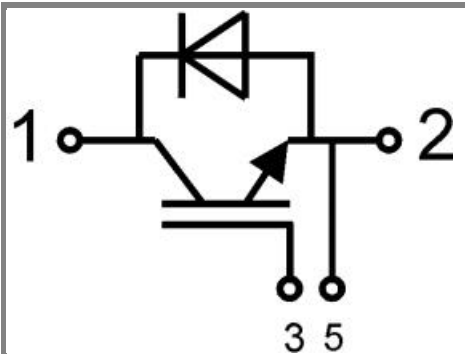
UL Recognized

CASED59

File 63 532



Case D 59



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Case D 59