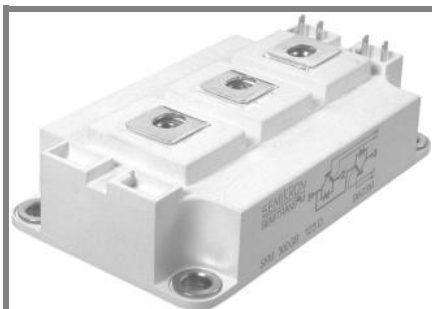


# SKM 150GB128D



**SEMITRANS® 3**

## SPT IGBT Modules

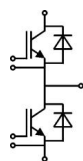
### SKM 150GB128D

#### 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

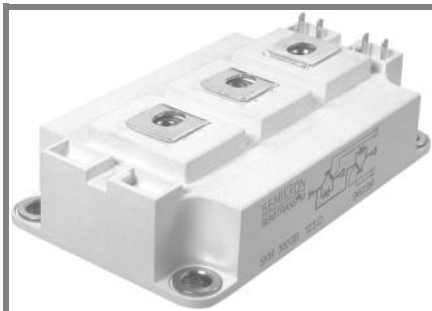
- AC inverter drives
- UPS
- Electronic welders at  $f_{sw}$  up to 20 kHz



**GB**

Absolute Maximum Ratings		$T_c = 25\text{ }^\circ\text{C}$ , unless otherwise specified			
Symbol	Conditions	Values			Units
<b>IGBT</b>					
$V_{CES}$	$T_j = 25\text{ }^\circ\text{C}$	1200			V
$I_C$	$T_j = 150\text{ }^\circ\text{C}$	$T_c = 25\text{ }^\circ\text{C}$	200		A
		$T_c = 80\text{ }^\circ\text{C}$	140		A
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$	200			A
$V_{GES}$		$\pm 20$			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			$\mu\text{s}$
<b>Inverse Diode</b>					
$I_F$	$T_j = 150\text{ }^\circ\text{C}$	$T_{case} = 25\text{ }^\circ\text{C}$	150		A
		$T_{case} = 80\text{ }^\circ\text{C}$	100		A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$	200			A
$I_{FSM}$	$t_p = 10\text{ ms; sin.}$	$T_j = 150\text{ }^\circ\text{C}$	1100		A
<b>Module</b>					
$I_{t(RMS)}$		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	
<b>IGBT</b>						
$V_{GE(th)}$	$V_{GE} = V_{CE}; I_C = 4\text{ mA}$	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	
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}$	9		12	$\text{m}\Omega$
		$T_j = 125\text{ }^\circ\text{C}$	12		15	$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 100\text{ A}; V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}_{chiplev.}$	1,9		2,35	V
		$T_j = 125\text{ }^\circ\text{C}_{chiplev.}$	2,1		2,55	V
$C_{ies}$	$V_{CE} = 25; V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	8,1		nF	
$C_{oes}$			1,2		nF	
$C_{res}$			1,1		nF	
$Q_G$	$V_{GE} = -8\text{ V} - +20\text{ V}$	1200			nC	
$R_{Gint}$	$T_j = 25\text{ }^\circ\text{C}$	2,5			$\Omega$	
$t_{d(on)}$	$R_{Gon} = 8\text{ }\Omega$	$V_{CC} = 600\text{ V}$ $I_{Cnom} = 100\text{ A}$	80		ns	
$t_r$			40		ns	
$E_{on}$	$R_{Goff} = 8\text{ }\Omega$	$T_j = 125\text{ }^\circ\text{C}$ $V_{GE} = \pm 15\text{ V}$	10		mJ	
$t_{d(off)}$			460		ns	
$t_f$			65		ns	
$E_{off}$			9		mJ	
$R_{th(j-c)}$	per IGBT	0,15			K/W	



**SEMITRANS® 3**

## SPT IGBT Modules

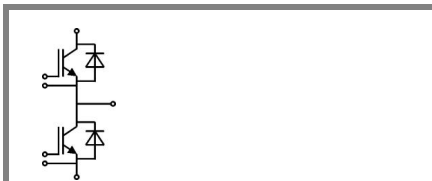
### SKM 150GB128D

#### 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



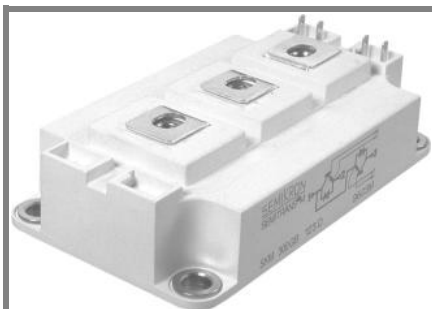
**GB**

Characteristics				min.	typ.	max.	Units
<b>Symbol</b>	<b>Conditions</b>						
<b>Inverse Diode</b>							
$V_F = V_{EC}$	$I_{Fnom} = 100 \text{ A}$ ; $V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$		2	2,5		V
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$		1,8	2,3		V
$V_{F0}$		$T_j = 25 \text{ }^\circ\text{C}$		1,1	1,45		V
		$T_j = 125 \text{ }^\circ\text{C}$			1,25		V
$r_F$		$T_j = 25 \text{ }^\circ\text{C}$		9	13		mΩ
		$T_j = 125 \text{ }^\circ\text{C}$			11		mΩ
$I_{RRM}$	$I_{Fnom} = 100 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$		145			A
$Q_{rr}$	$di/dt = 3600 \text{ A}/\mu\text{s}$			16,5			μC
$E_{rr}$	$V_{GE} = -15 \text{ V}$ ; $V_{CC} = 600 \text{ V}$			5,5			mJ
$R_{th(j-c)D}$	per diode					0,3	K/W
<b>Module</b>							
$L_{CE}$				15	20		nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25 \text{ }^\circ\text{C}$		0,35			mΩ
		$T_{case} = 125 \text{ }^\circ\text{C}$		0,5			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			2,5		5	Nm
w						325	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.

# SKM 150GB128D



**SEMITRANS® 3**

## SPT IGBT Modules

**SKM 150GB128D**

### Features

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- $V_{CEsat}$  with positive temperature coefficient
- High short circuit capability, self limiting to  $6 \times I_c$

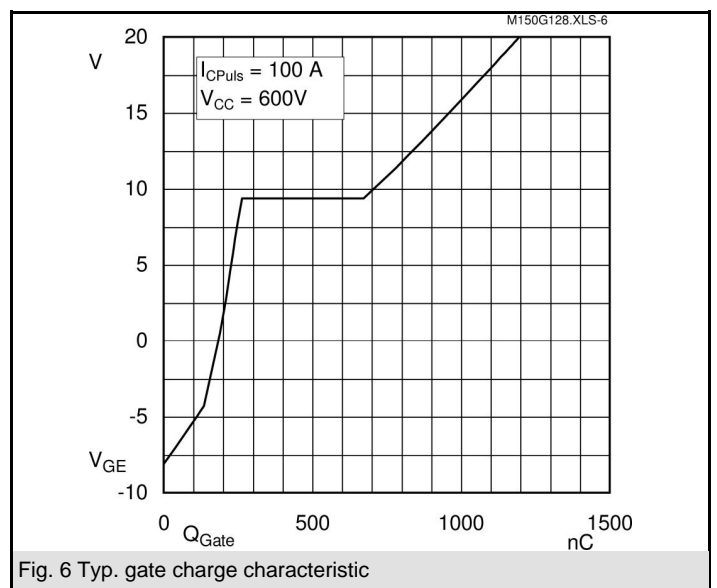
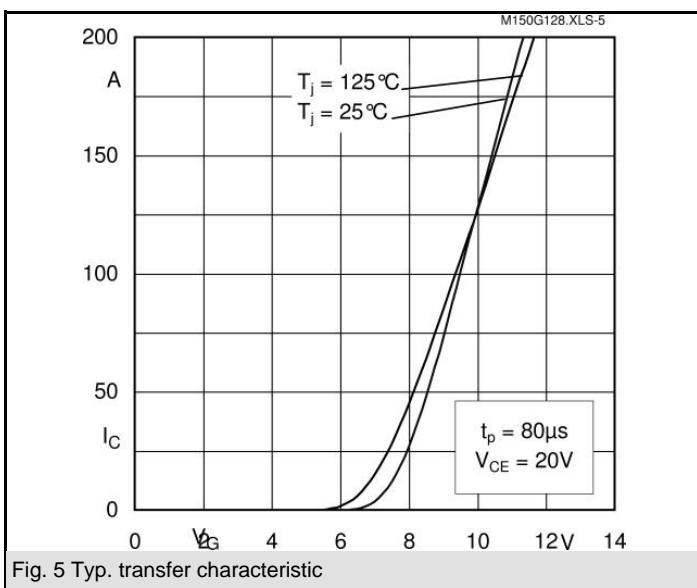
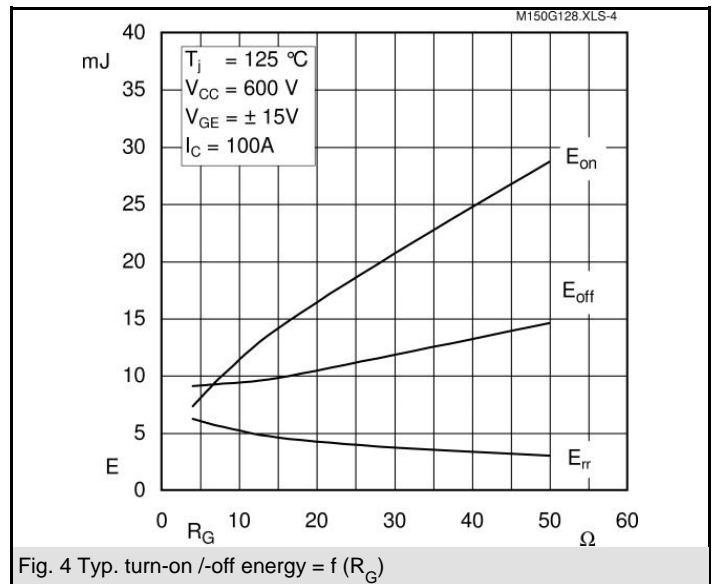
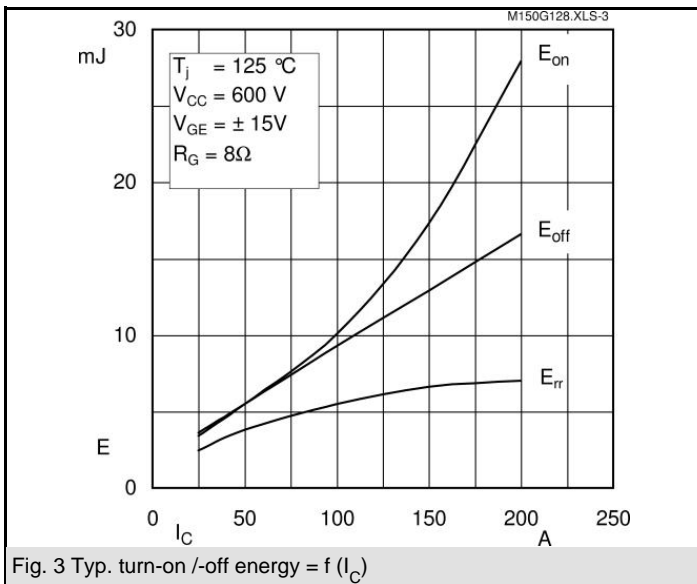
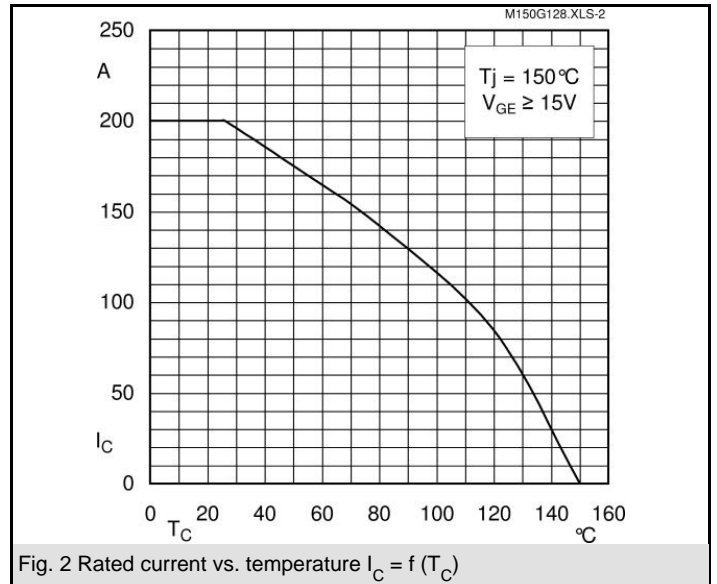
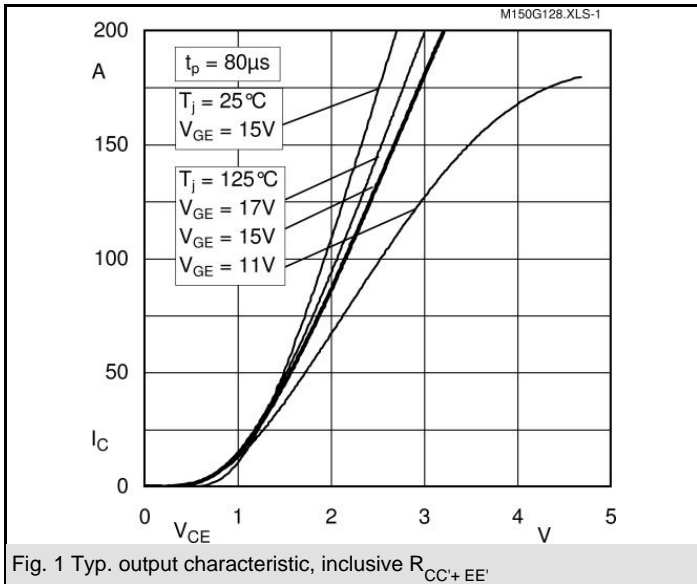
### Typical Applications

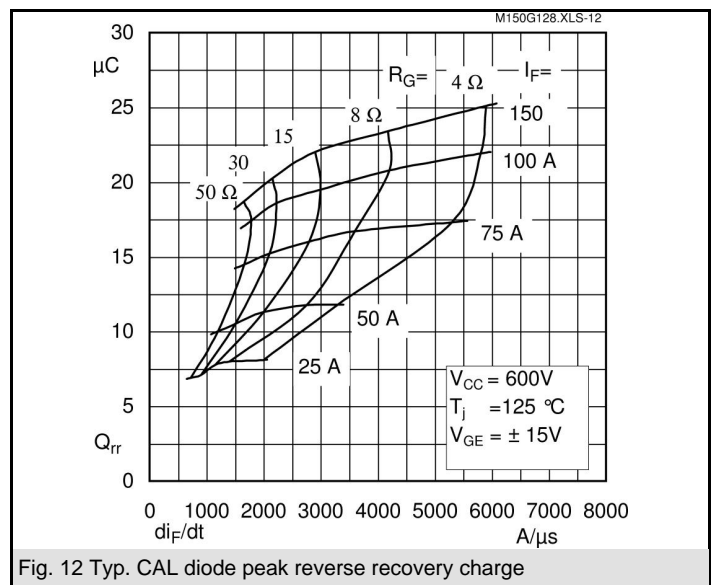
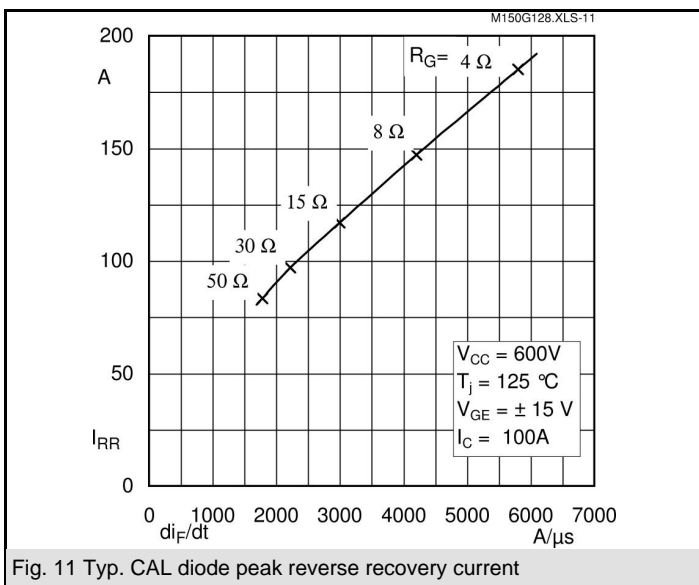
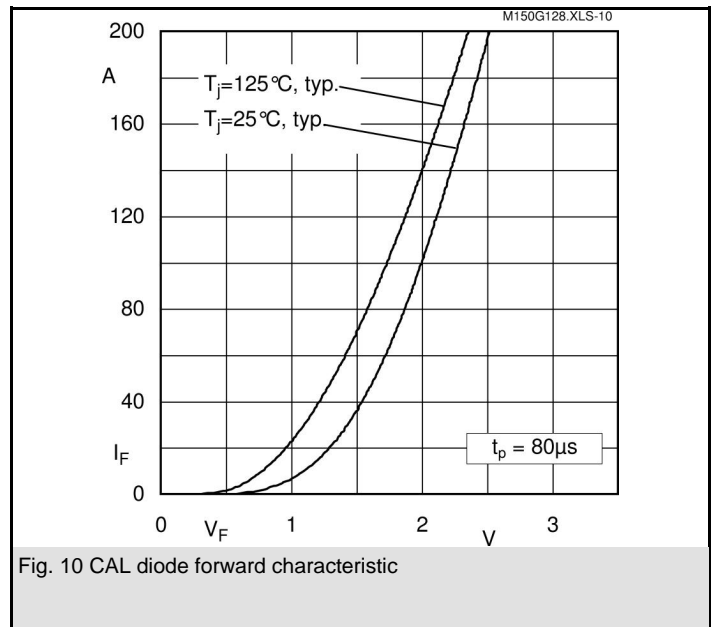
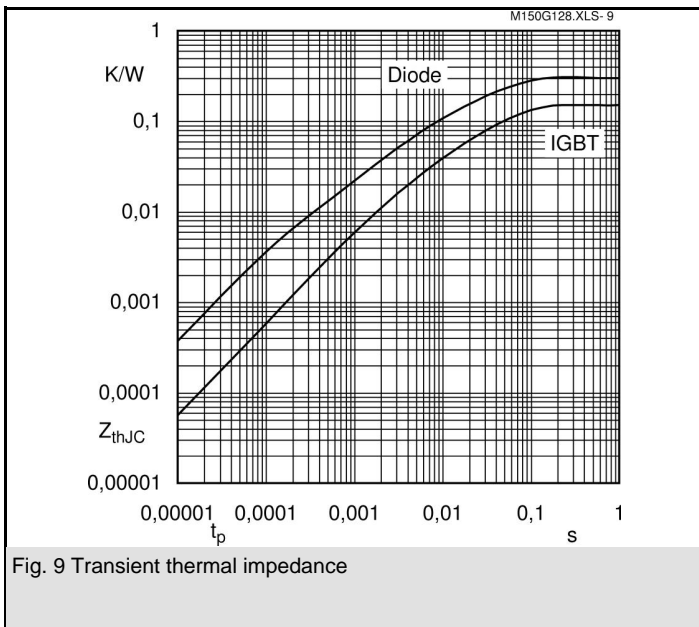
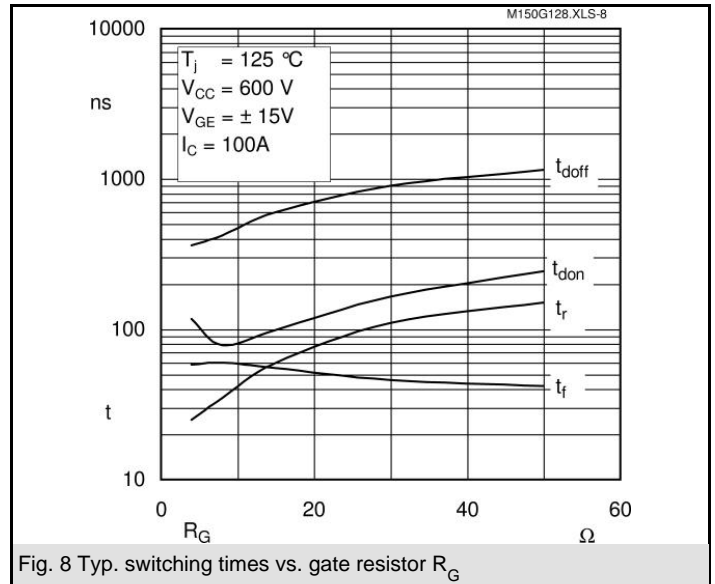
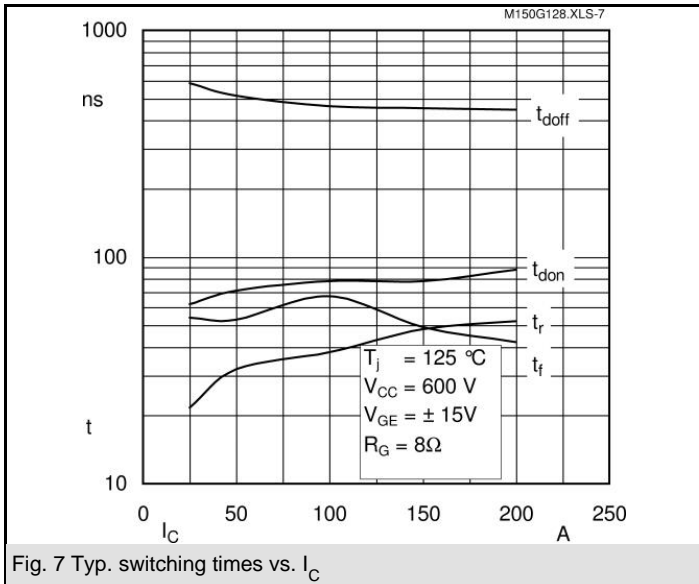
- AC inverter drives
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**GB**

$Z_{th}$		Conditions	Values	Units
<b>Symbol</b>				
$Z_{th(j-c)I}$				
$R_{\theta j-c}$		$i = 1$	116	mk/W
$R_{\theta j-c}$		$i = 2$	28	mk/W
$R_{\theta j-c}$		$i = 3$	5,4	mk/W
$R_{\theta j-c}$		$i = 4$	0,6	mk/W
$\tau_{th(j-c)}$		$i = 1$	0,0576	s
$\tau_{th(j-c)}$		$i = 2$	0,0073	s
$\tau_{th(j-c)}$		$i = 3$	0,023	s
$\tau_{th(j-c)}$		$i = 4$	0,02	s
$Z_{th(j-c)D}$				
$R_{\theta j-c}$		$i = 1$	190	mk/W
$R_{\theta j-c}$		$i = 2$	85	mk/W
$R_{\theta j-c}$		$i = 3$	21,5	mk/W
$R_{\theta j-c}$		$i = 4$	3,5	mk/W
$\tau_{th(j-c)}$		$i = 1$	0,0331	s
$\tau_{th(j-c)}$		$i = 2$	0,0113	s
$\tau_{th(j-c)}$		$i = 3$	0,0012	s
$\tau_{th(j-c)}$		$i = 4$	0,001	s



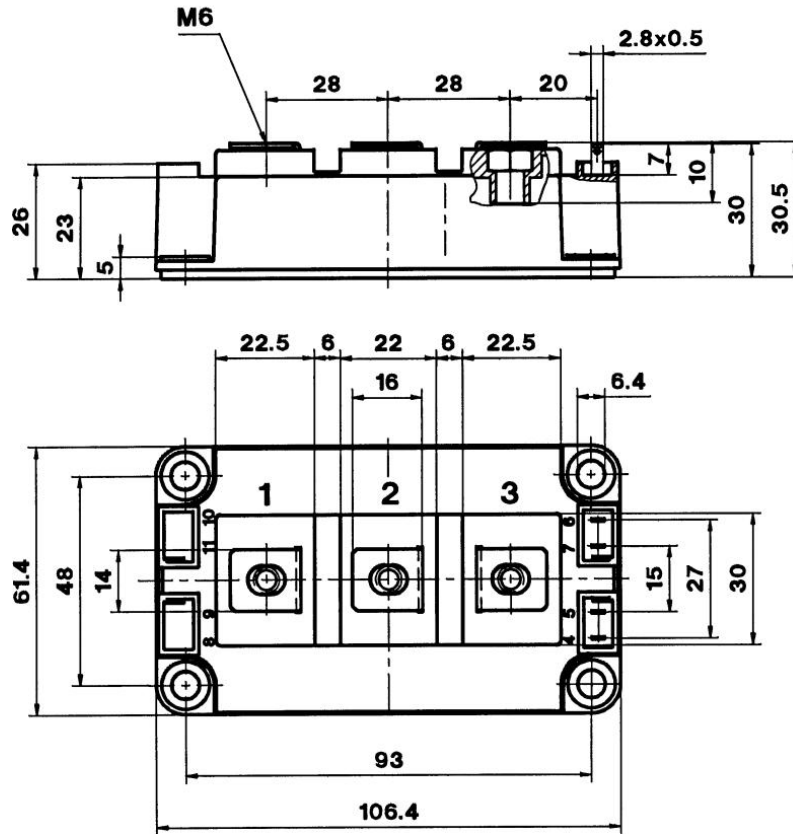


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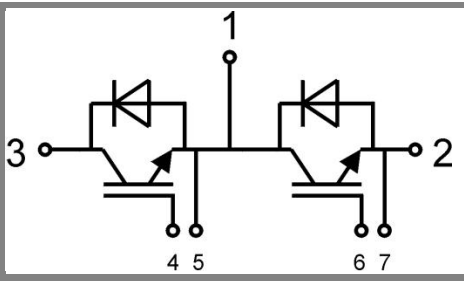
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CASED56

File no. 63 532



Case D 56



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