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**SEMITRANS® 2**

## SPT IGBT Module

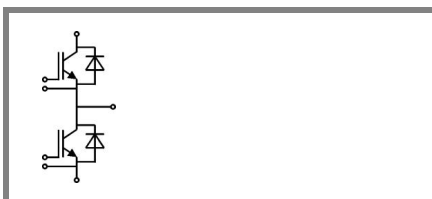
**SKM 100GB128D**

### 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
$I_C$	$T_j = 150\text{ }^\circ\text{C}$	$T_c = 25\text{ }^\circ\text{C}$	145		A
		$T_c = 80\text{ }^\circ\text{C}$	105		A
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$	150			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>					
$I_F$	$T_j = 150\text{ }^\circ\text{C}$	$T_{case} = 25\text{ }^\circ\text{C}$	95		A
		$T_{case} = 80\text{ }^\circ\text{C}$	65		A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$	150			A
$I_{FSM}$	$t_p = 10\text{ ms}; \sin.$	$T_j = 150\text{ }^\circ\text{C}$	720		A
<b>Module</b>					
$I_{t(RMS)}$		200			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>						
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 3\text{ mA}$	4,5	5,5	6,45	V	
$I_{CES}$	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$		0,1	0,3	mA	
$V_{CE0}$		$T_j = 25\text{ }^\circ\text{C}$	1		1,15	V
		$T_j = 125\text{ }^\circ\text{C}$	0,9		1,05	V
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}$	13		16	m $\Omega$
		$T_j = 125\text{ }^\circ\text{C}$	16		20	m $\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 75\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}_{chiplev.}$	1,9		2,35	V
		$T_j = 125\text{ }^\circ\text{C}_{chiplev.}$	2,1		2,55	V
$C_{ies}$	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	6,2		nF	
$C_{oes}$			0,74		nF	
$C_{res}$			0,71		nF	
$Q_G$	$V_{GE} = -8\text{ V} - +20\text{ V}$		860		nC	
$R_{Gint}$	$T_j = 25\text{ }^\circ\text{C}$		5		$\Omega$	
$t_{d(on)}$	$R_{Gon} = 4,7\text{ }^\circ\Omega$	$V_{CC} = 600\text{ V}$ $I_{Cnom} = 75\text{ A}$	175		ns	
$t_r$			38		ns	
$E_{on}$	$R_{Goff} = 4,7\text{ }^\circ\Omega$	$T_j = 125\text{ }^\circ\text{C}$ $V_{GE} = \pm 15\text{ V}$	9		mJ	
$t_{d(off)}$			370		ns	
$t_f$			65		ns	
$E_{off}$			7,5		mJ	
$R_{th(j-c)}$	per IGBT		0,21		K/W	



**SEMITRANS® 2**

## SPT IGBT Module

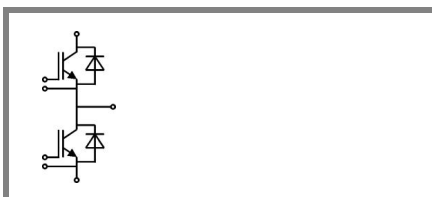
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**GB**

Characteristics				min.	typ.	max.	Units
<b>Symbol</b>	<b>Conditions</b>						
<b>Inverse Diode</b>							
$V_F = V_{EC}$	$I_{Fnom} = 75 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$		2		2,5	V
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$		1,8			V
$V_{F0}$		$T_j = 25 \text{ }^\circ\text{C}$			1,1	1,2	V
$r_F$		$T_j = 25 \text{ }^\circ\text{C}$			12	17,3	mΩ
$I_{RRM}$	$I_{Fnom} = 75 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$			88		A
$Q_{rr}$	$di/dt = 2800 \text{ A}/\mu\text{s}$				13		μC
$E_{rr}$	$V_{GE} = -15 \text{ V}; V_{CC} = 600 \text{ V}$				3,9		mJ
$R_{th(j-c)D}$	per diode					0,5	K/W
<b>Module</b>							
$L_{CE}$						30	nH
$R_{CC+EE'}$	res., terminal-chip	$T_{case} = 25 \text{ }^\circ\text{C}$		0,75			mΩ
		$T_{case} = 125 \text{ }^\circ\text{C}$		1			mΩ
$R_{th(c-s)}$	per module					0,05	K/W
$M_s$	to heat sink M6			3		5	Nm
$M_t$	to terminals M5			2,5		5	Nm
w						160	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 100GB128D



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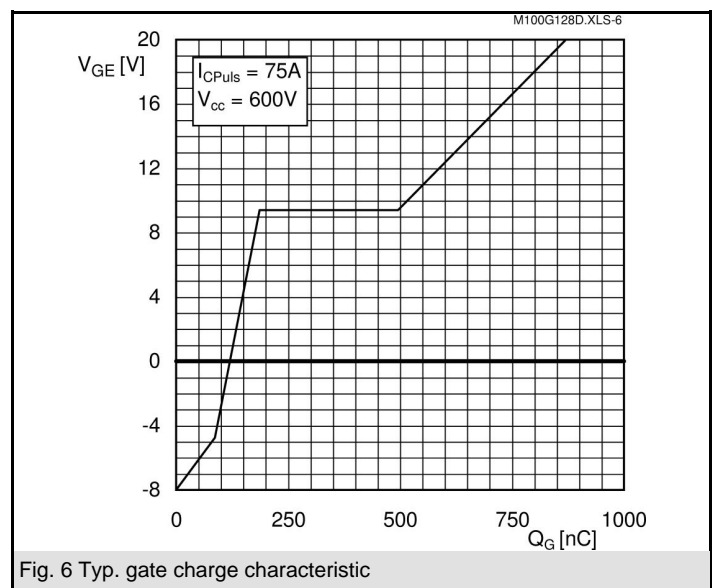
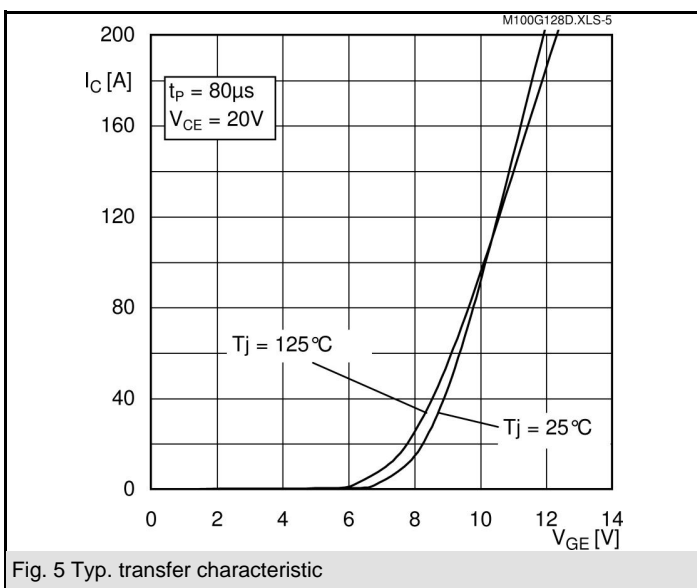
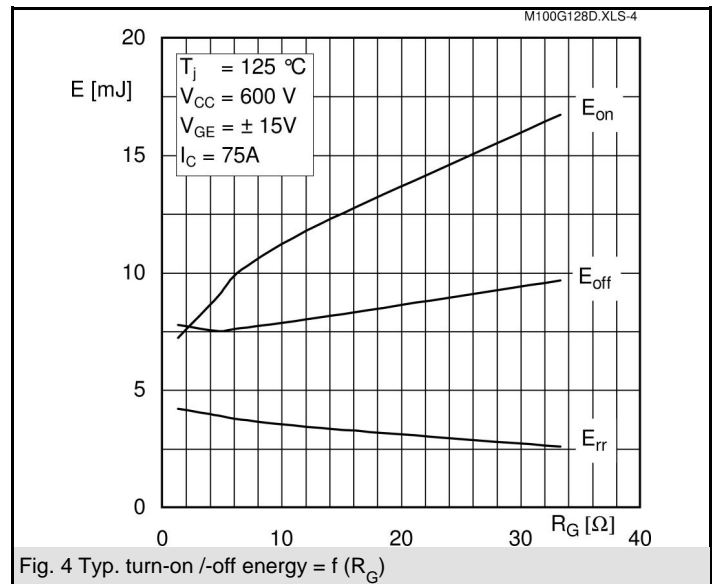
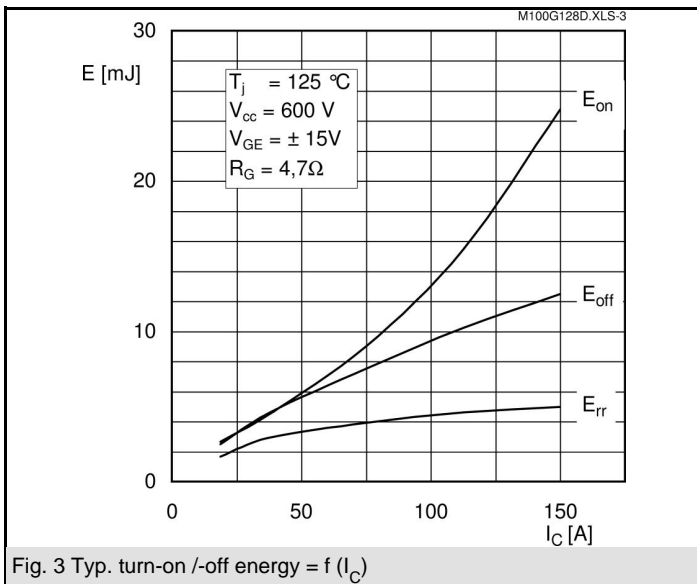
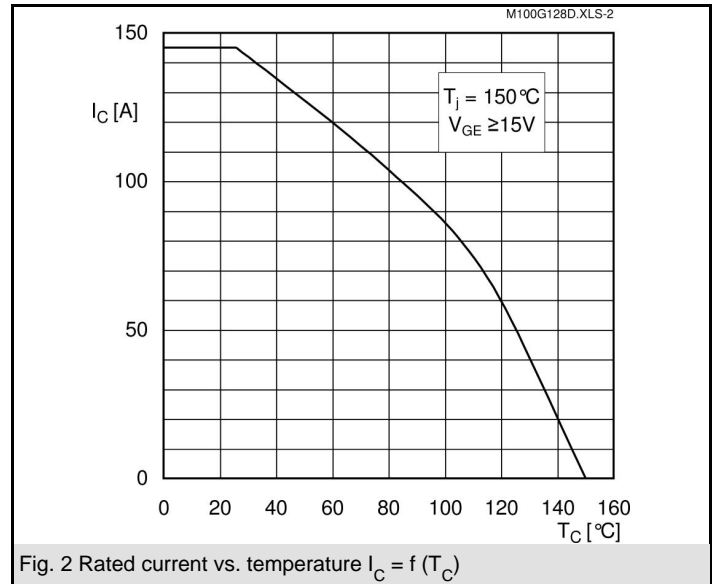
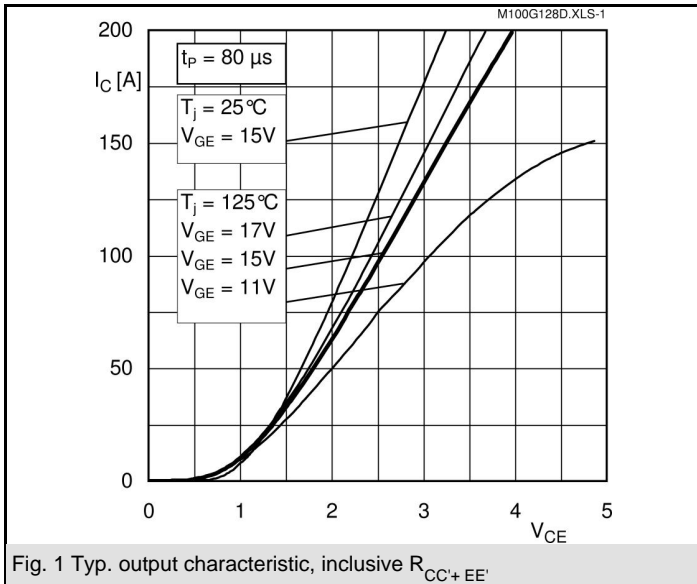
### Typical Applications

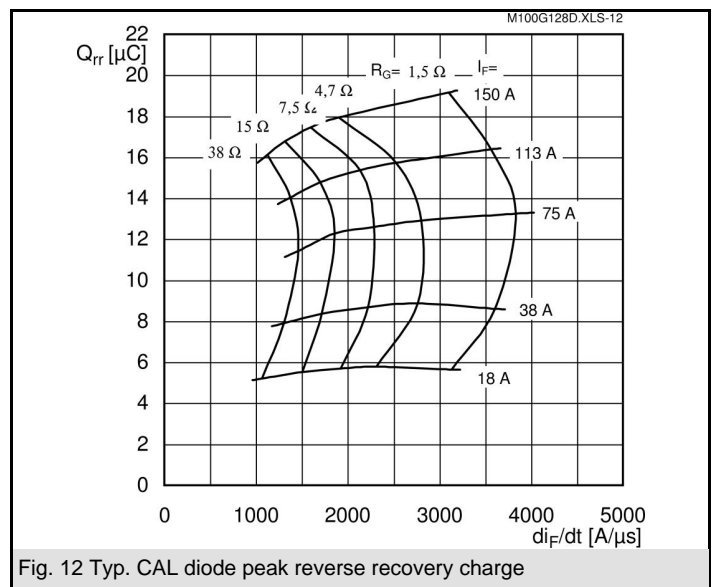
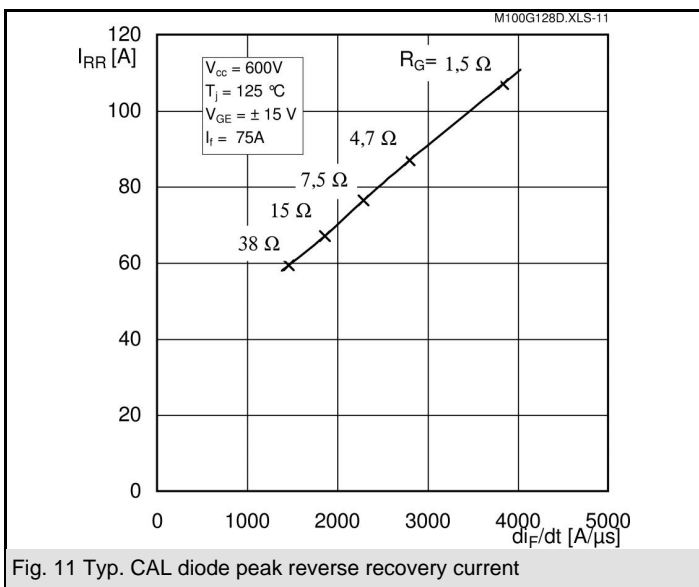
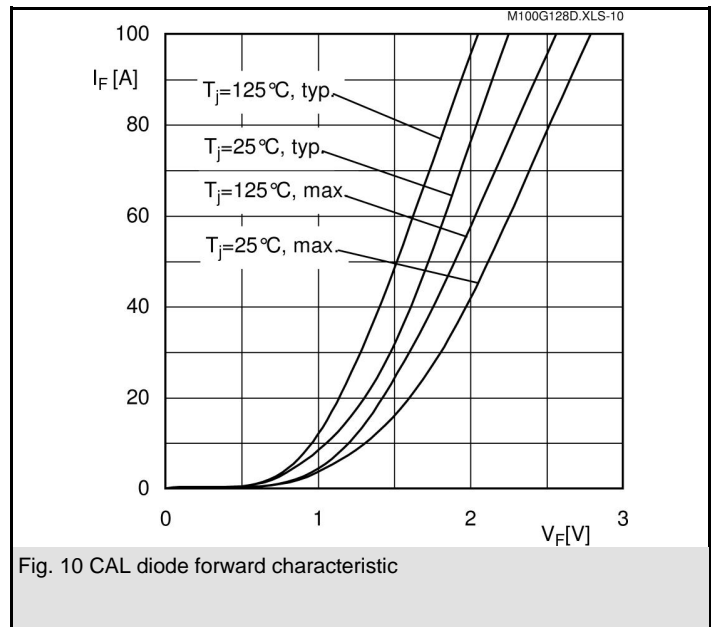
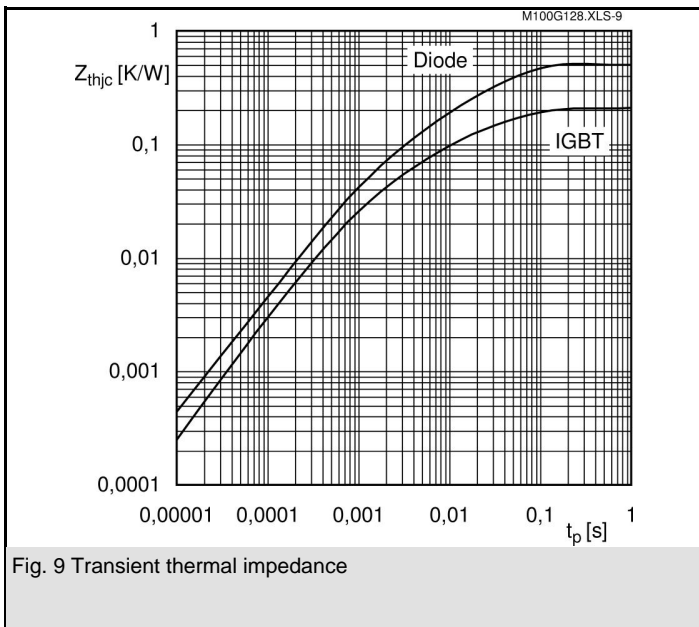
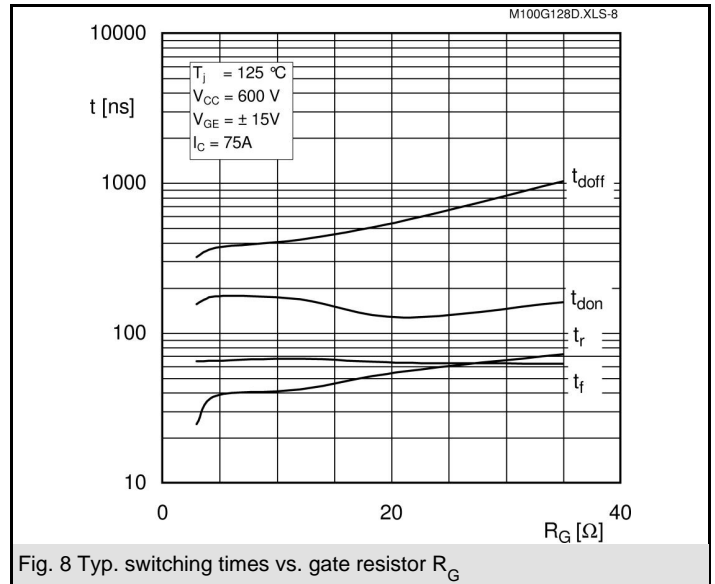
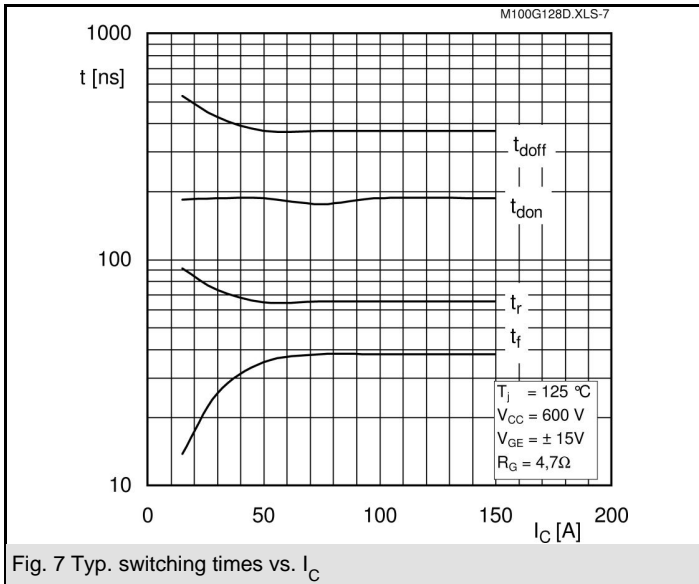
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$Z_{th}$		Conditions	Values	Units
<b><math>Z_{th(j-c)I}</math></b>				
$R_{\theta j-c}$		$i = 1$	114	mk/W
$R_{\theta j-c}$		$i = 2$	71	mk/W
$R_{\theta j-c}$		$i = 3$	22	mk/W
$R_{\theta j-c}$		$i = 4$	3	mk/W
$\tau_{\theta j-c}$		$i = 1$	0,054	s
$\tau_{\theta j-c}$		$i = 2$	0,0115	s
$\tau_{\theta j-c}$		$i = 3$	0,0012	s
$\tau_{\theta j-c}$		$i = 4$	0,001	s
<b><math>Z_{th(j-c)D}</math></b>				
$R_{\theta j-c}$		$i = 1$	300	mk/W
$R_{\theta j-c}$		$i = 2$	160	mk/W
$R_{\theta j-c}$		$i = 3$	35,5	mk/W
$R_{\theta j-c}$		$i = 4$	4,5	mk/W
$\tau_{\theta j-c}$		$i = 1$	0,054	s
$\tau_{\theta j-c}$		$i = 2$	0,0071	s
$\tau_{\theta j-c}$		$i = 3$	0,0017	s
$\tau_{\theta j-c}$		$i = 4$	0,005	s



**GB**



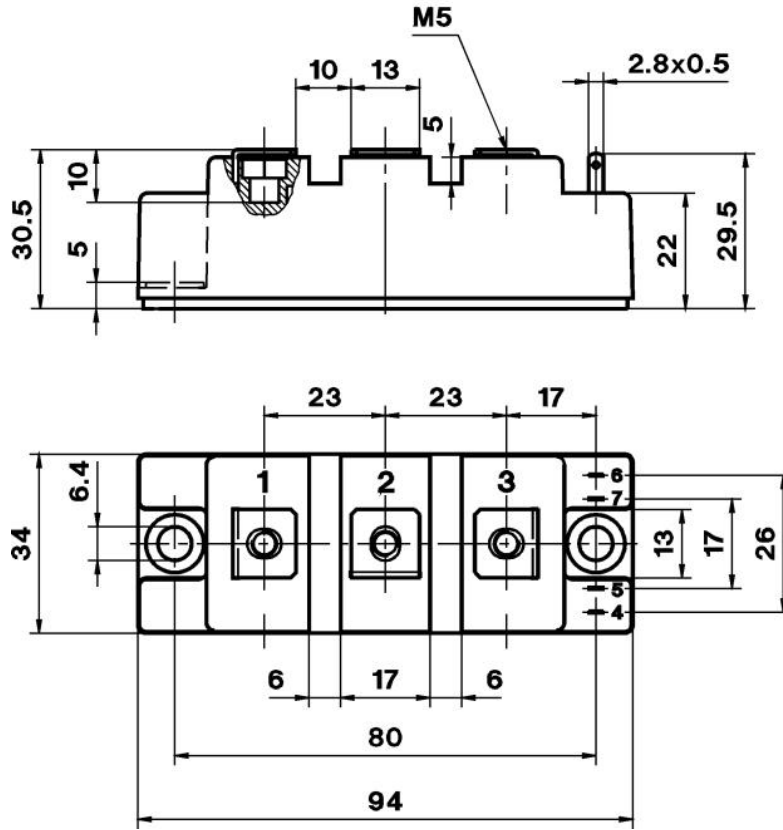


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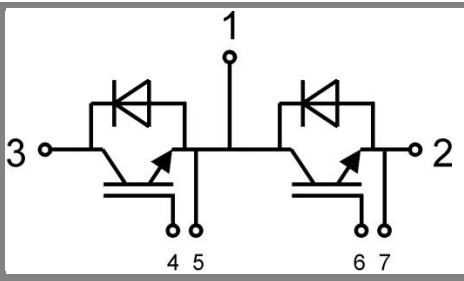
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