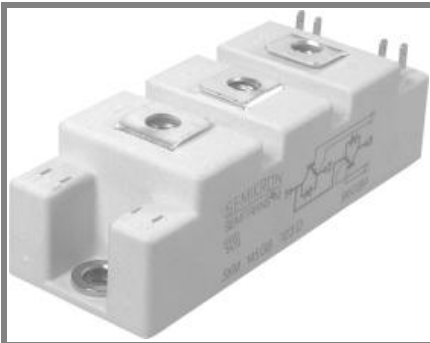


# SKM 100GB128D



**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
$I_{FSM}$	$t_p = 10\text{ ms}; \text{sin.}$	$T_j = 150\text{ }^\circ\text{C}$	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		V
		$T_j = 125\text{ }^\circ\text{C}$	0,9		V
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}$	13		$\text{m}\Omega$
		$T_j = 125\text{ }^\circ\text{C}$	16		$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 75\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25\text{ }^\circ\text{C}_{chiplev.}$	1,9		V
		$T_j = 125\text{ }^\circ\text{C}_{chiplev.}$	2,1		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		$\Omega$
$t_{d(on)}$	$R_{Gon} = 4,7\ \Omega$	$V_{CC} = 600\text{ V}$ $I_{Cnom} = 75\text{ A}$	175		ns
$t_r$			38		ns
$E_{on}$			9		mJ
$t_{d(off)}$	$R_{Goff} = 4,7\ \Omega$	$T_j = 125\text{ }^\circ\text{C}$ $V_{GE} = \pm 15\text{ V}$	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

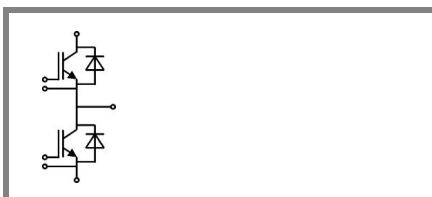
**SKM 100GB128D**

### 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



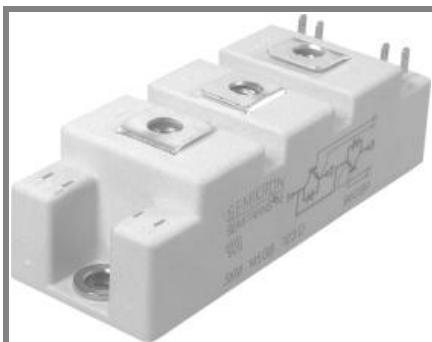
**GB**

Characteristics			min.	typ.	max.	Units
<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



**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  $6 \times I_c$

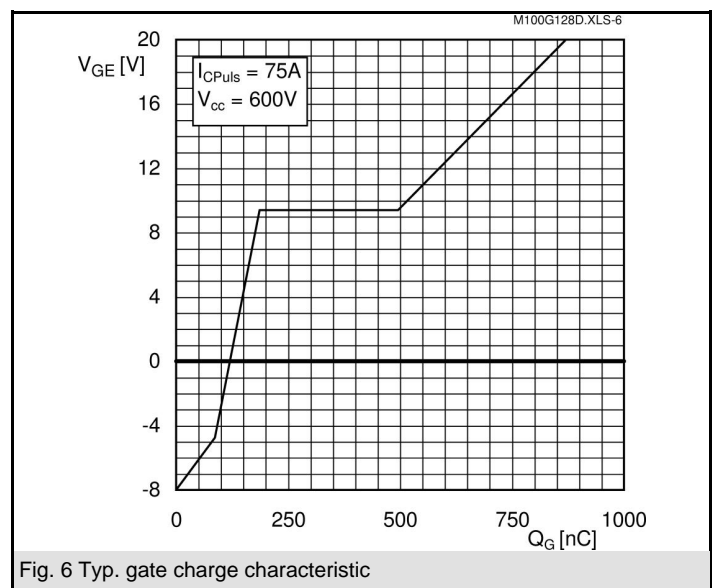
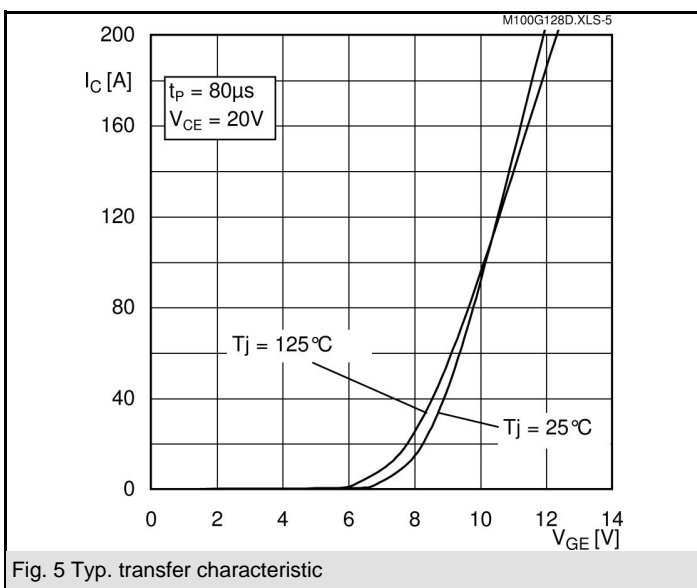
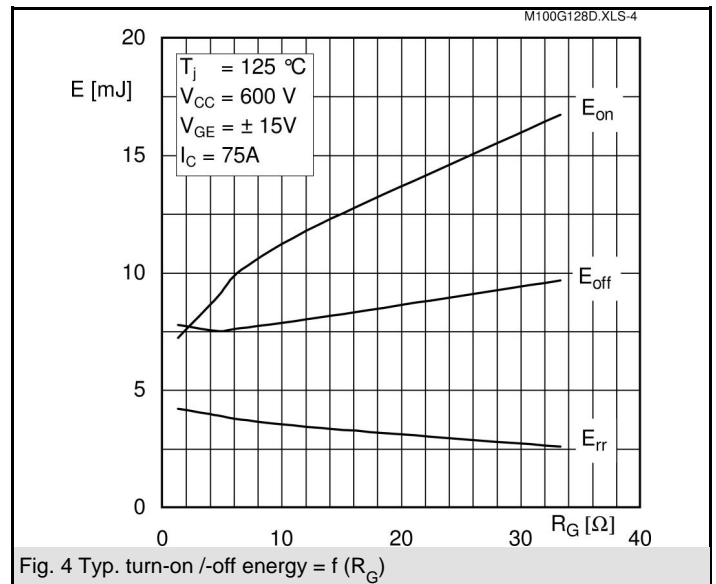
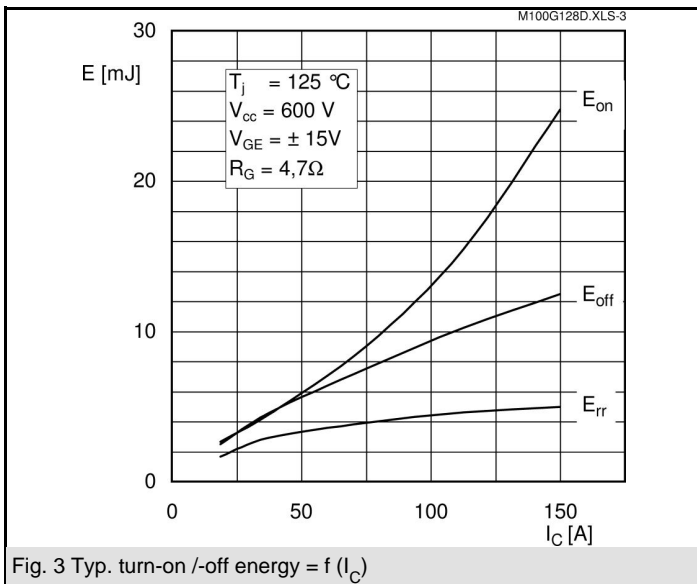
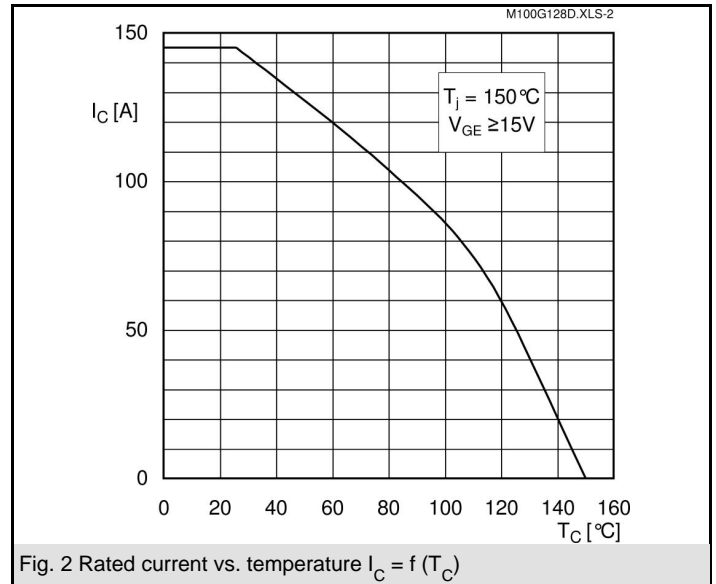
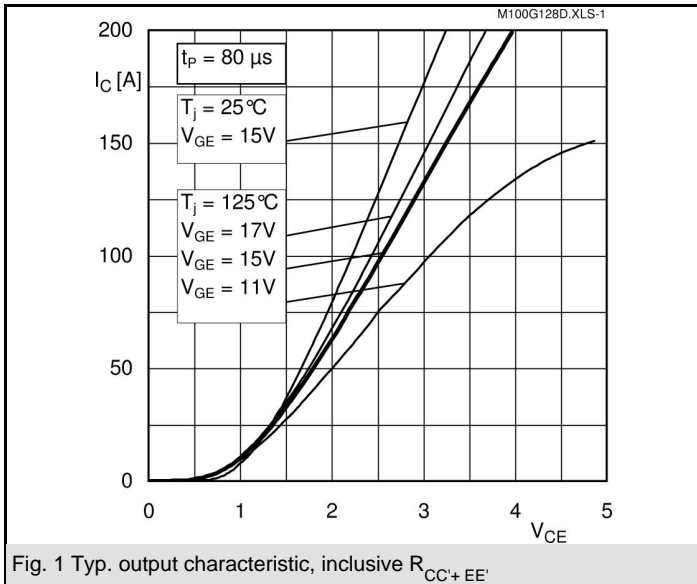
### Typical Applications

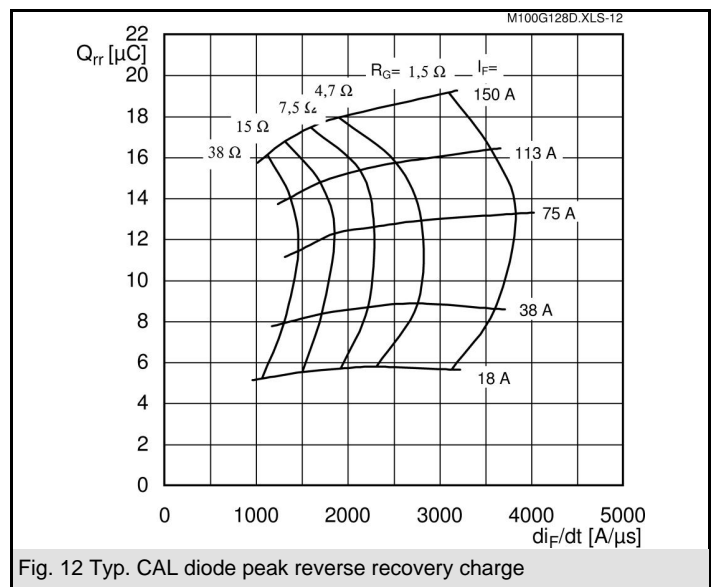
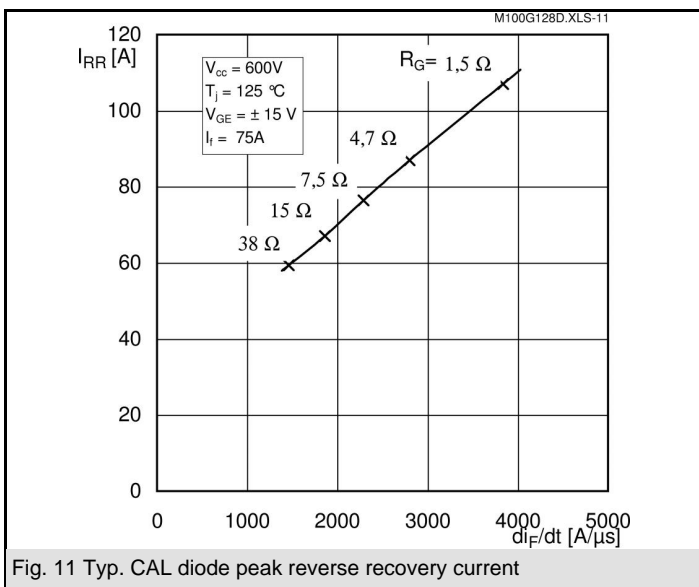
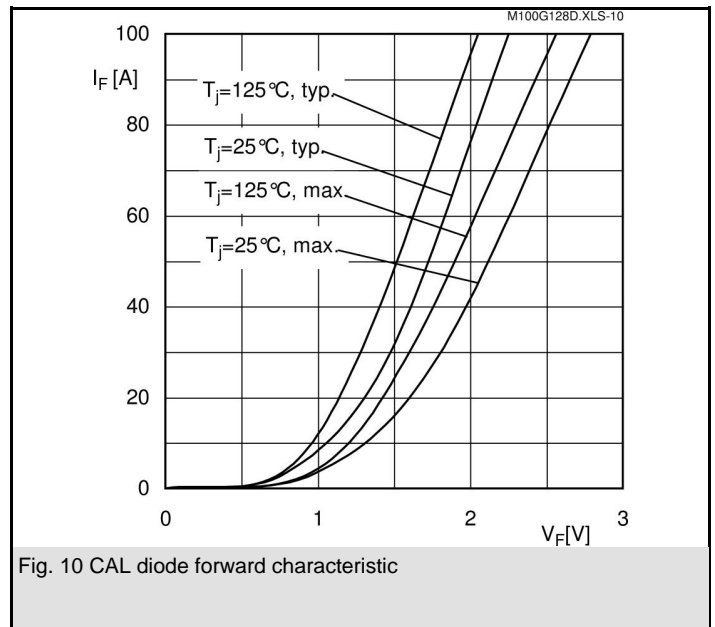
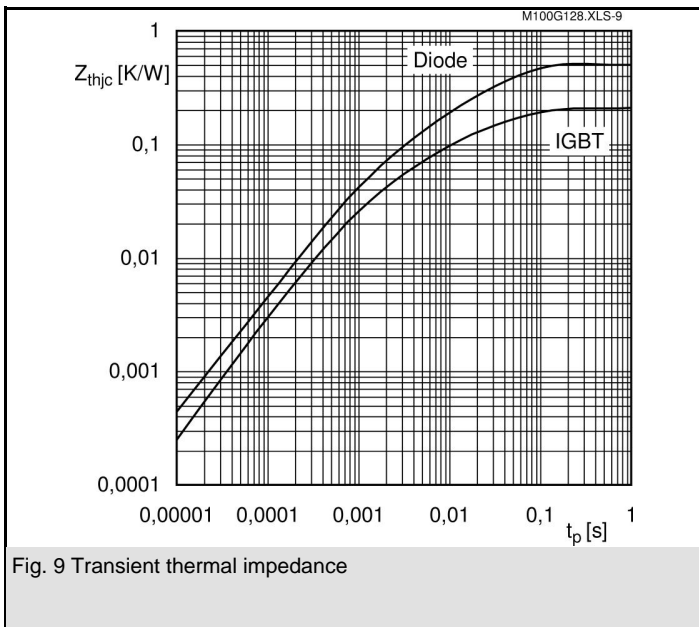
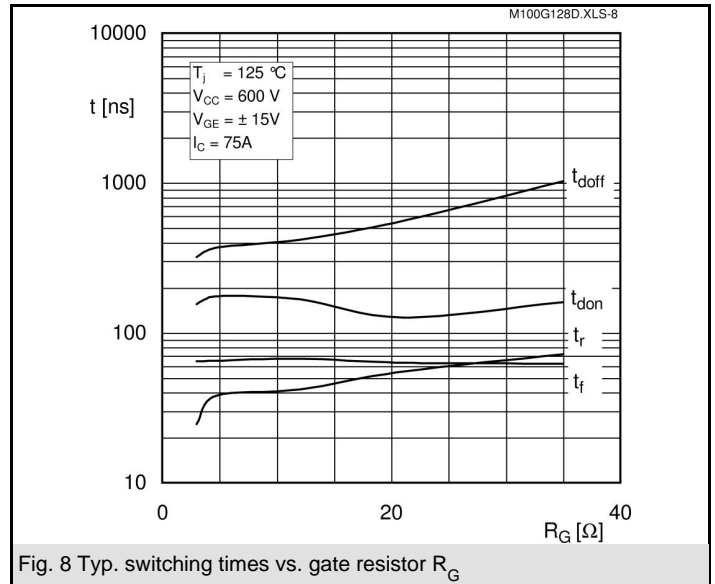
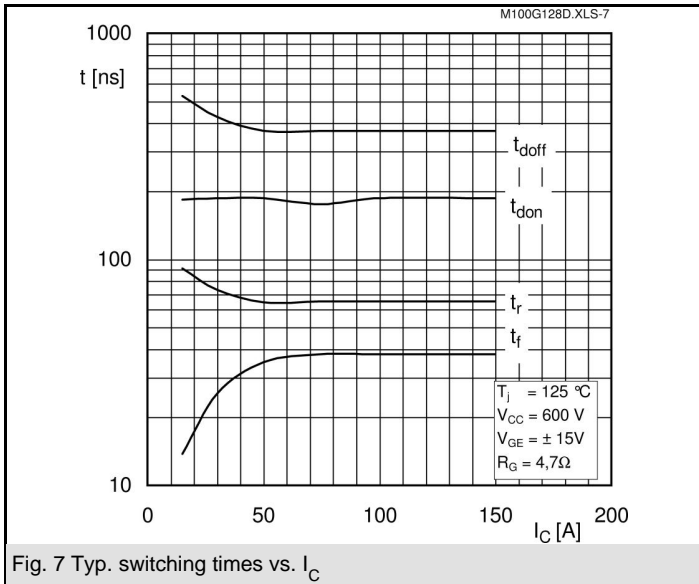
- AC inverter drives
- UPS
- Electronic welders at  $f_{sw}$  up to 20 kHz



**GB**

$Z_{th}$		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



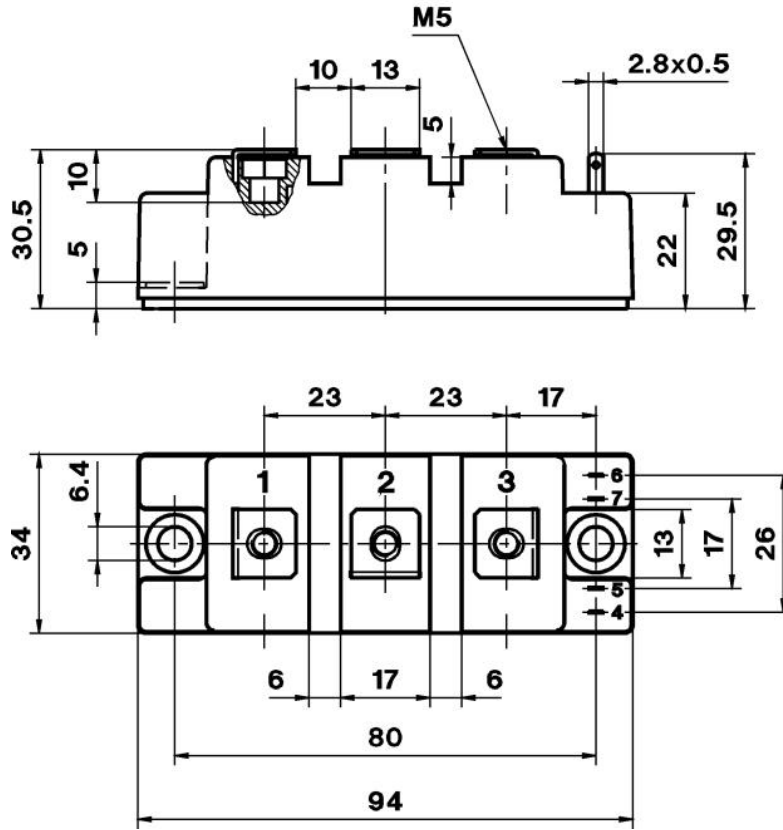


# SKM 100GB128D

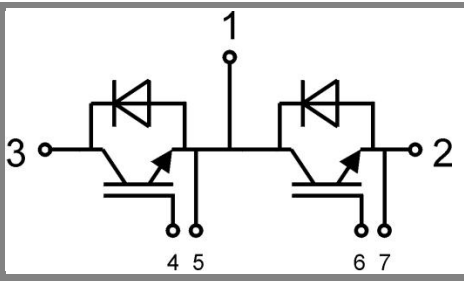
UL Regognized

CASED61

File no. E 63 532



Case D 61



GB

Case D 61