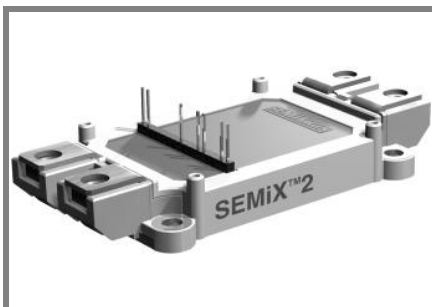


# SEMiX 452GB126HD



**SEMiX<sup>®</sup> 2**

## Trench IGBT Modules

### SEMiX 452GB126HD

Preliminary Data

#### Features

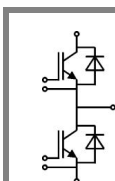
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$  with positive temperature coefficient
- High short circuit capability

#### Typical Applications

- AC inverter drives
- UPS
- Electronic Welding

#### Remarks

- Case temperatur limited to  $T_C=125^\circ\text{C}$  max.
- Not for new design

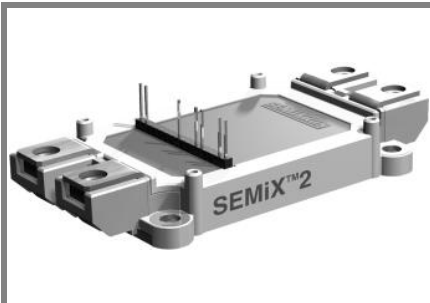


**GB**

Absolute Maximum Ratings		$T_{case} = 25^\circ\text{C}$ , unless otherwise specified		
Symbol	Conditions	Values		Units
<b>IGBT</b>				
$V_{CES}$	$T_j = 25^\circ\text{C}$	1200		V
$I_C$	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	455	A
		$T_{case} = 80^\circ\text{C}$	320	A
$I_{CRM}$	$I_{CRM} = 2 \times I_{Cnom}$	600		A
$V_{GES}$		$\pm 20$		V
$t_{psc}$	$V_{CC} = 600\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125^\circ\text{C}$ $V_{CES} < 1200\text{ V}$	10		$\mu\text{s}$
<b>Inverse Diode</b>				
$I_F$	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	395	A
		$T_{case} = 80^\circ\text{C}$	270	A
$I_{FRM}$	$I_{FRM} = 2 \times I_{Fnom}$	600		A
$I_{FSM}$	$t_p = 10\text{ ms}; \text{sin.}$	$T_j = 25^\circ\text{C}$	1900	A
<b>Module</b>				
$I_{t(RMS)}$		600		A
$T_{vj}$		- 40 ... + 150		$^\circ\text{C}$
$T_{stg}$		- 40 ... + 125		$^\circ\text{C}$
$V_{isol}$	AC, 1 min.	4000		V

Characteristics		$T_{case} = 25^\circ\text{C}$ , unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
<b>IGBT</b>					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 12\text{ mA}$	5	5,8	6,5	V
$I_{CES}$	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$			0,3	mA
$V_{CE0}$		$T_j = 25^\circ\text{C}$	1	1,2	V
		$T_j = 125^\circ\text{C}$	0,9	1,1	V
$r_{CE}$	$V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}$	2,3	3,2	$\text{m}\Omega$
		$T_j = 125^\circ\text{C}$	3,7	4,5	$\text{m}\Omega$
$V_{CE(sat)}$	$I_{Cnom} = 300\text{ A}, V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}_{chiplev.}$	1,7	2,15	V
		$T_j = 125^\circ\text{C}_{chiplev.}$	2	2,45	V
$C_{ies}$	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	21,5		nF
$C_{oes}$			1,13		nF
$C_{res}$			0,98		nF
$Q_G$	$V_{GE} = -8 \dots +15\text{V}$	2400		nC	
$t_{d(on)}$	$R_{Gon} = 2\ \Omega$	$V_{CC} = 600\text{V}$ $I_{Cnom} = 300\text{A}$	280		ns
$t_r$			65		ns
$E_{on}$	$R_{Goff} = 2\ \Omega$	$T_j = 125^\circ\text{C}$	35		mJ
$t_{d(off)}$			630		ns
$t_f$			130		ns
$E_{off}$			45		mJ
$R_{th(j-c)}$	per IGBT	0,083		K/W	

# SEMiX 452GB126HD



**SEMiX<sup>®</sup> 2**

## Trench IGBT Modules

### SEMiX 452GB126HD

Preliminary Data

#### Features

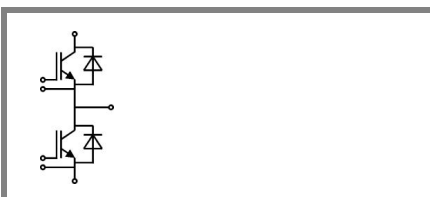
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$  with positive temperature coefficient
- High short circuit capability

#### Typical Applications

- AC inverter drives
- UPS
- Electronic Welding

#### Remarks

- Case temperatur limited to  $T_C=125^{\circ}\text{C}$  max.
- Not for new design

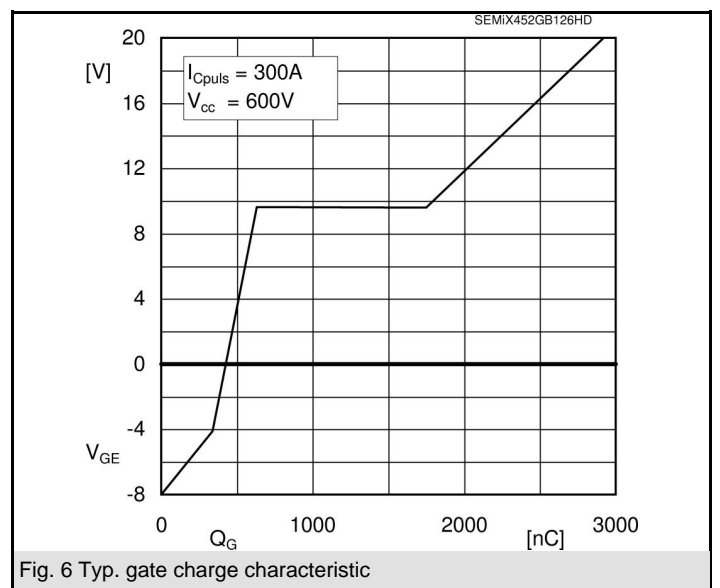
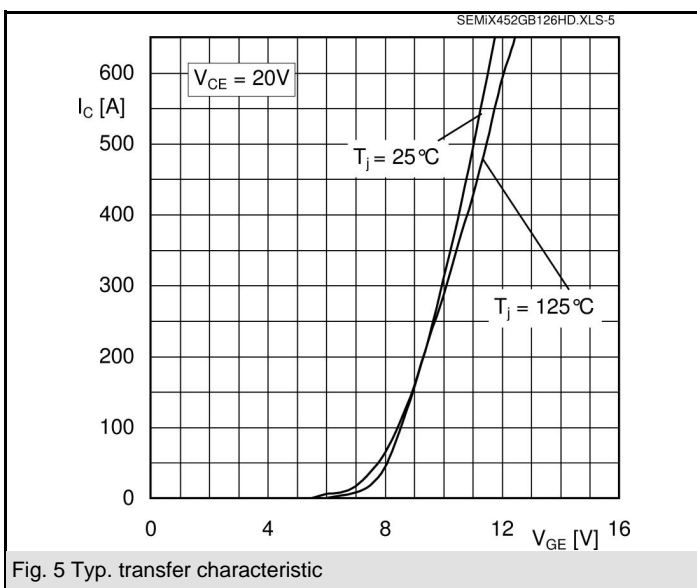
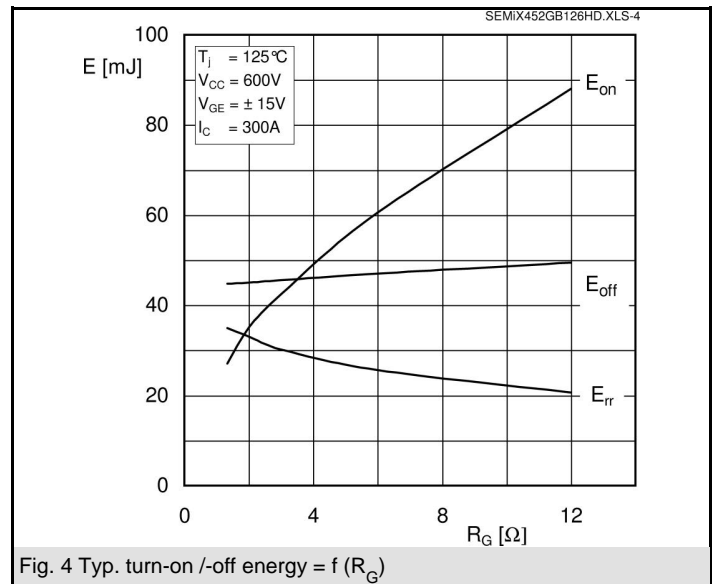
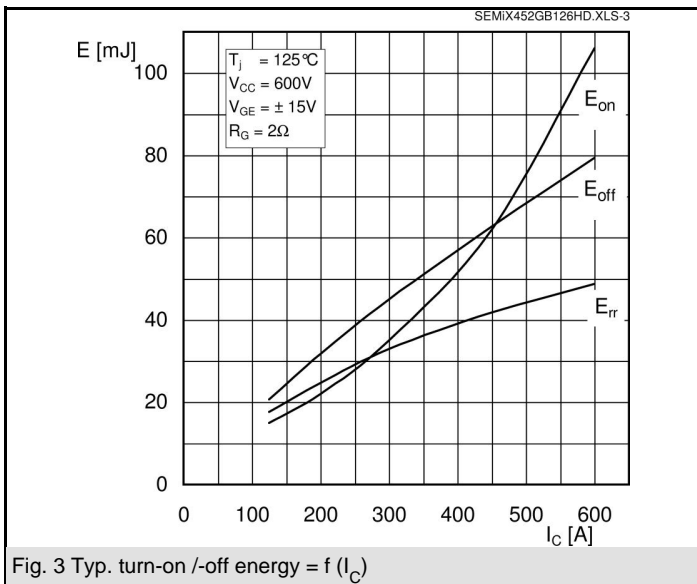
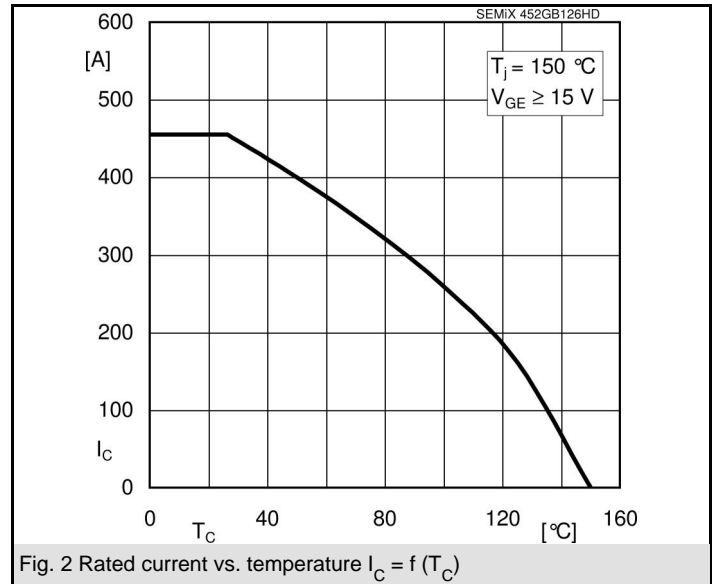
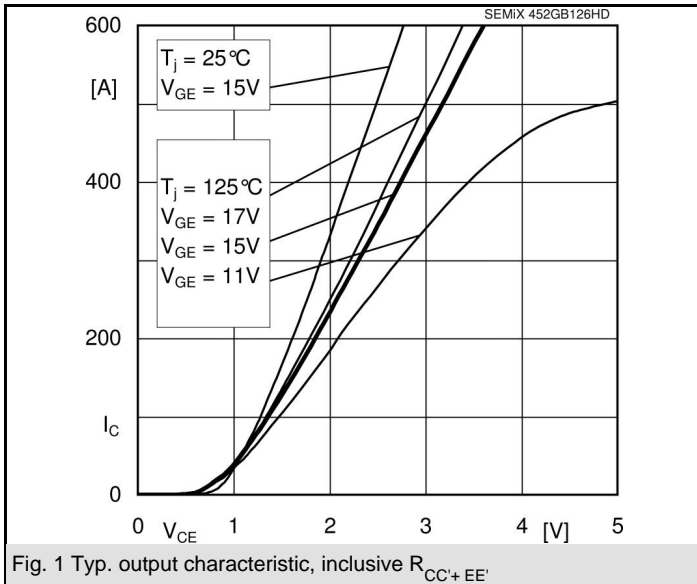


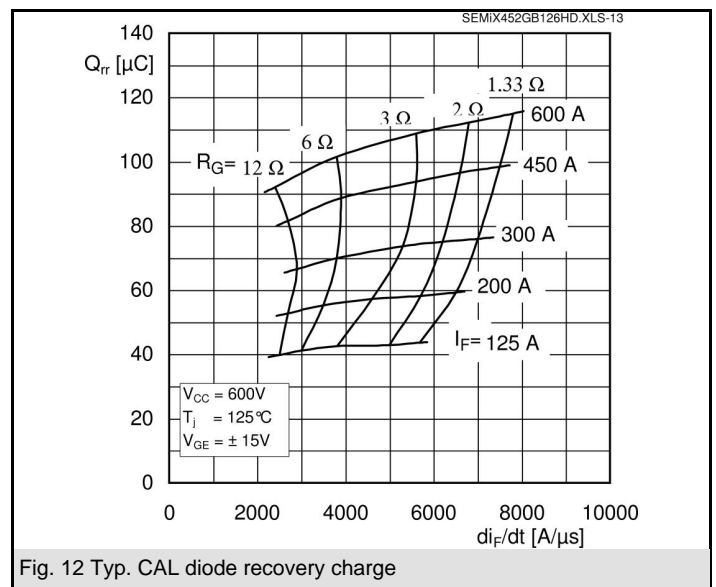
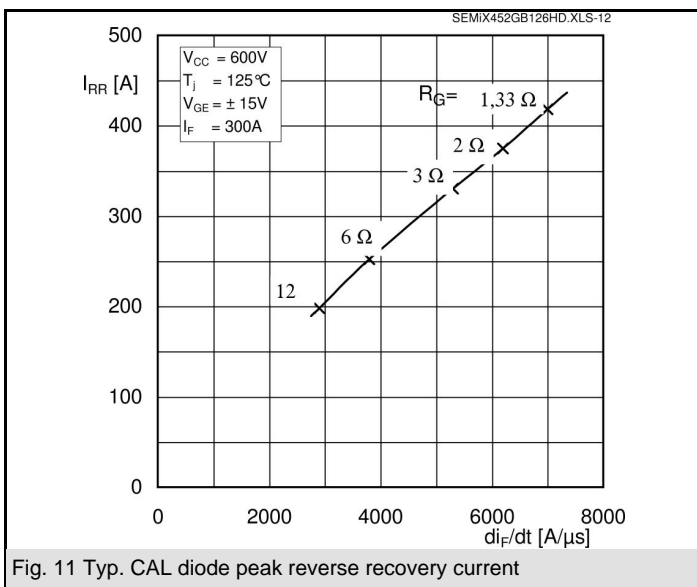
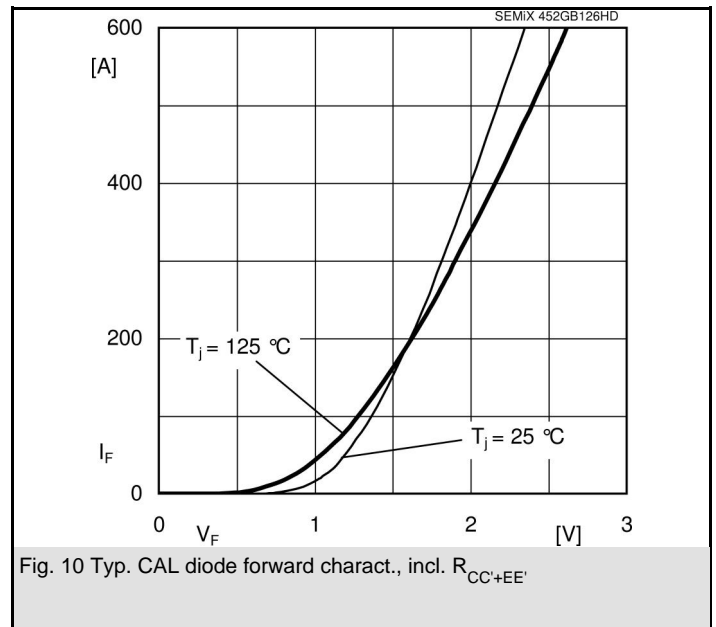
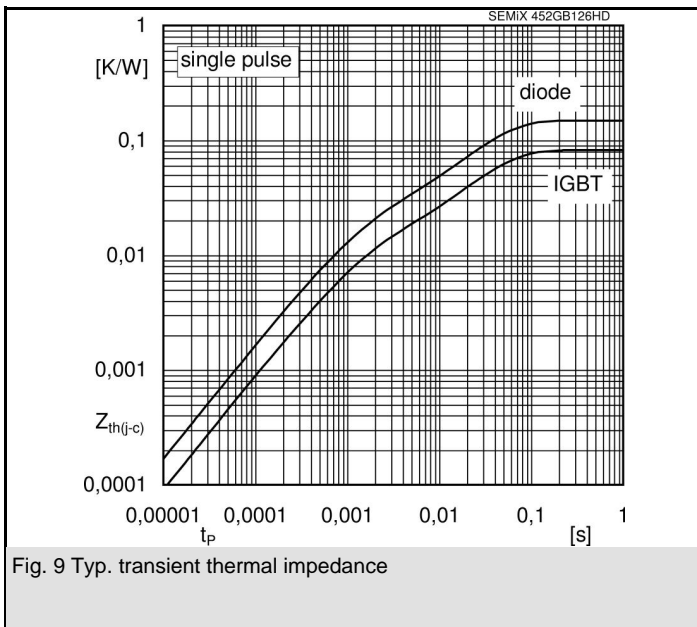
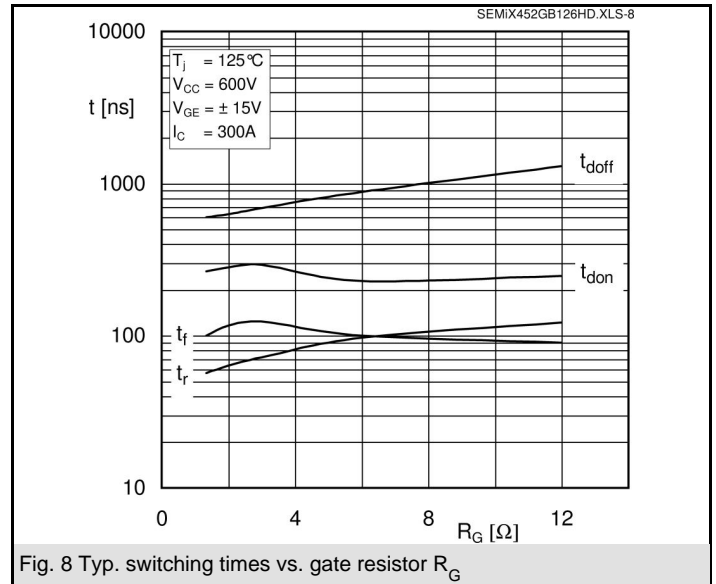
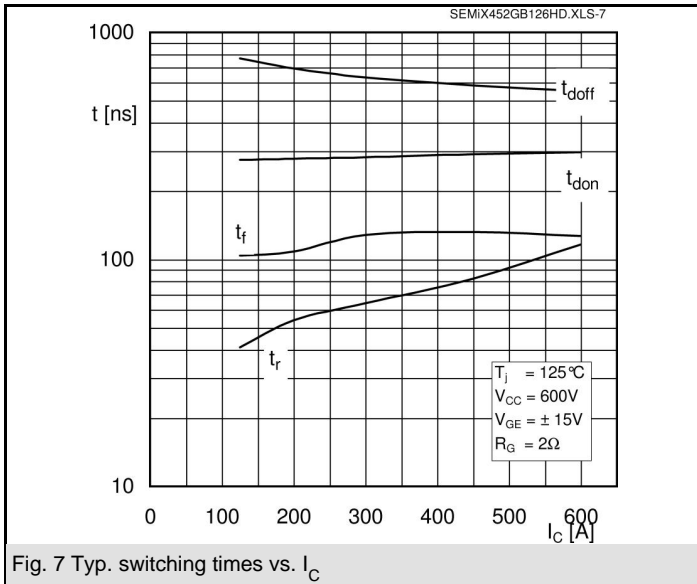
**GB**

Characteristics				min.	typ.	max.	Units
Symbol	Conditions						
<b>Inverse Diode</b>							
$V_F = V_{EC}$	$I_{Fnom} = 300 \text{ A}$ ; $V_{GE} = 0 \text{ V}$	$T_j = 25^{\circ}\text{C}_{chiplev.}$		1,6	1,8		V
		$T_j = 125^{\circ}\text{C}_{chiplev.}$		1,6	1,8		V
$V_{F0}$		$T_j = 25^{\circ}\text{C}$		1	1,1		V
		$T_j = 125^{\circ}\text{C}$		0,8	0,9		V
$r_F$		$T_j = 25^{\circ}\text{C}$		2	2,3		mΩ
		$T_j = 125^{\circ}\text{C}$		2,7	3		mΩ
$I_{RRM}$	$I_{Fnom} = 300 \text{ A}$	$T_j = 125^{\circ}\text{C}$		375			A
$Q_{rr}$	$di/dt = 6200 \text{ A}/\mu\text{s}$			75			μC
$E_{rr}$	$V_{GE} = -15 \text{ V}$ ; $V_{CC} = 600 \text{ V}$			33			mJ
$R_{th(j-c)D}$	per diode				0,15		K/W
<b>Module</b>							
$L_{CE}$				18			nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25^{\circ}\text{C}$		0,7			mΩ
		$T_{case} = 125^{\circ}\text{C}$		1			mΩ
$R_{th(c-s)}$	per module			0,045			K/W
$M_s$	to heat sink (M5)			3	5		Nm
$M_t$	to terminals (M6)			2,5	5		Nm
w					250		g
<b>Temperature sensor</b>							
$R_{100}$	$T_c = 100^{\circ}\text{C}$ ( $R_{25} = 5 \text{ k}\Omega$ )			0,493±5%			kΩ
$B_{100/125}$	$R(T) = R_{100} \exp[B_{100/125} (1/T - 1/T_{100})]$ ; $T[\text{K}]; B$			3550±2%			K

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

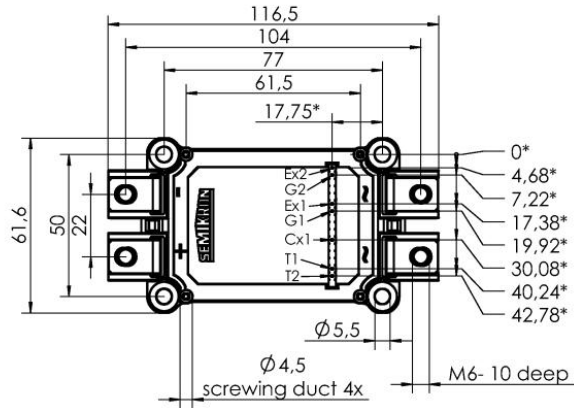
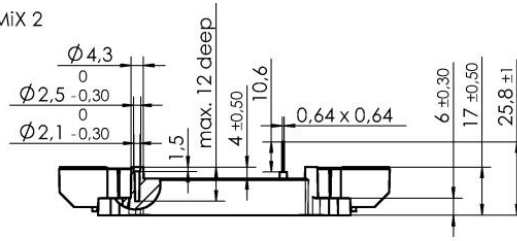
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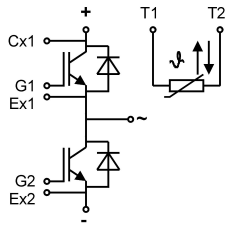
# SEMiX 452GB126HD

case: SEMiX 2



\*= all measures with  $\phi 0,5$

Case SEMiX 2



Pinout

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