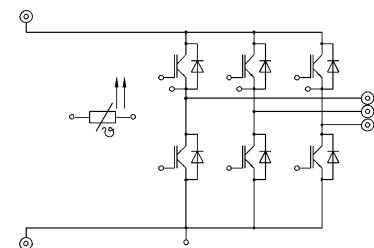


## SKiiP 25 AC 12 T2

### MiniSKiiP 2 SEMIKRON integrated intelligent Power SKiiP 25 AC 12 T2 3-phase bridge inverter

Case M2



UL recognized file no. E63532

- 1)  $T_{\text{heatsink}} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified
- 2) CAL = Controlled Axial Lifetime Technology (soft and fast recovery)
- 3) Output current limited to 36 A by spring contact

Absolute Maximum Ratings		Values	Units
Symbol	Conditions <sup>1)</sup>		
Inverter			
$V_{\text{CES}}$		1200	V
$V_{\text{GES}}$		$\pm 20$	V
$I_{\text{C}}$	$T_{\text{heatsink}} = 25 / 80\text{ }^{\circ}\text{C}$	58 / 40 <sup>3)</sup>	A
$I_{\text{CM}}$	$t_{\text{p}} < 1\text{ ms}$ ; $T_{\text{heatsink}} = 25 / 80\text{ }^{\circ}\text{C}$	126 / 80	A
$I_{\text{F}} = -I_{\text{C}}$	$T_{\text{heatsink}} = 25 / 80\text{ }^{\circ}\text{C}$	57 / 38	A
$I_{\text{FM}} = -I_{\text{CM}}$	$t_{\text{p}} < 1\text{ ms}$ ; $T_{\text{heatsink}} = 25 / 80\text{ }^{\circ}\text{C}$	114 / 76	A
$T_{\text{j}}$		- 40 ... + 150	$^{\circ}\text{C}$
$T_{\text{stg}}$		- 40 ... + 125	$^{\circ}\text{C}$
$V_{\text{isol}}$	AC, 1 min.	2500	V

Characteristics		min.	typ.	max.	Units
Symbol	Conditions <sup>1)</sup>				
IGBT - Inverter					
$V_{\text{CESat}}$	$I_{\text{C}} = 50\text{ A}$ $T_{\text{j}} = 25\text{ (125)}\text{ }^{\circ}\text{C}$	-	2,5(3,1)	3,0(3,7)	V
$t_{\text{d(on)}}$	$V_{\text{CC}} = 600\text{ V}$ ; $V_{\text{GE}} = \pm 15\text{ V}$ $I_{\text{C}} = 50\text{ A}$ ; $T_{\text{j}} = 125\text{ }^{\circ}\text{C}$ $R_{\text{gon}} = R_{\text{goff}} = 22\text{ }\Omega$ inductive load	-	44	100	ns
$t_{\text{r}}$		-	56	100	ns
$t_{\text{d(off)}}$		-	380	500	ns
$t_{\text{f}}$		-	70	100	ns
$E_{\text{on}} + E_{\text{off}}$		-	13	-	mJ
$C_{\text{ies}}$	$V_{\text{CE}} = 25\text{ V}$ ; $V_{\text{GE}} = 0\text{ V}$ , 1 MHz	-	3,3	-	nF
$R_{\text{thjh}}$	per IGBT	-	-	0,6	K/W
Diode <sup>2)</sup> - Inverter					
$V_{\text{F}} = V_{\text{EC}}$	$I_{\text{F}} = 50\text{ A}$ $T_{\text{j}} = 25\text{ (125)}\text{ }^{\circ}\text{C}$	-	2,0(1,8)	2,5(2,3)	V
$V_{\text{TO}}$	$T_{\text{j}} = 125\text{ }^{\circ}\text{C}$	-	1,0	1,2	V
$r_{\text{T}}$	$T_{\text{j}} = 125\text{ }^{\circ}\text{C}$	-	16	22	m $\Omega$
$I_{\text{RRM}}$	$I_{\text{F}} = 50\text{ A}$ , $V_{\text{R}} = - 600\text{ V}$ $di_{\text{F}}/dt = - 800\text{ A}/\mu\text{s}$ $V_{\text{GE}} = 0\text{ V}$ , $T_{\text{j}} = 125\text{ }^{\circ}\text{C}$	-	40	-	A
$Q_{\text{rr}}$		-	8,0	-	$\mu\text{C}$
$E_{\text{off}}$		-	2,0	-	mJ
$R_{\text{thjh}}$		per diode	-	-	0,9
Temperature Sensor					
$R_{\text{TS}}$	$T = 25 / 100\text{ }^{\circ}\text{C}$		1000 / 1670		$\Omega$
Mechanical Data					
$M_1$	Mounting torque	2	-	2,5	Nm
Case			M2		

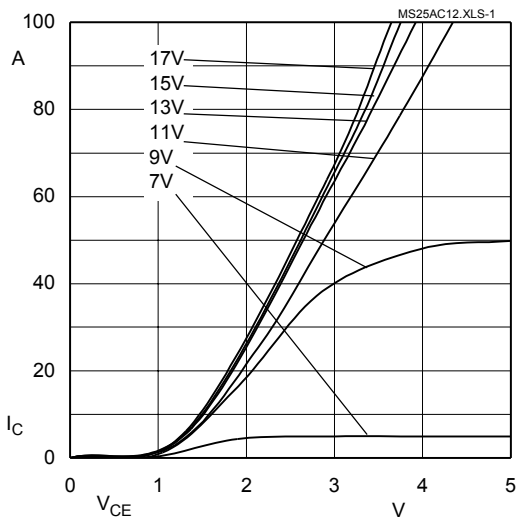


Fig. 1 Typ. output characteristic,  $t_p = 80 \mu s$ ;  $25 \text{ }^\circ\text{C}$

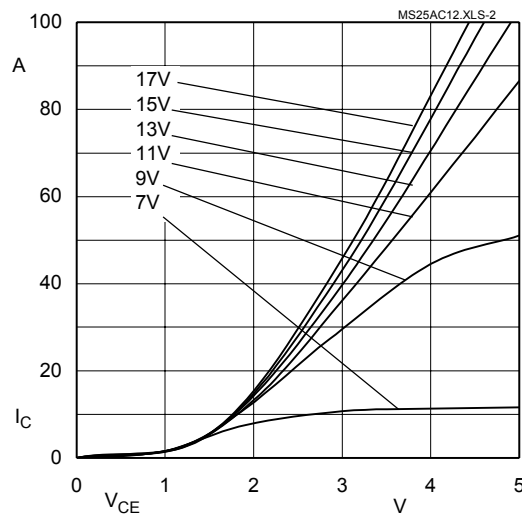


Fig. 2 Typ. output characteristic,  $t_p = 80 \mu s$ ;  $125 \text{ }^\circ\text{C}$

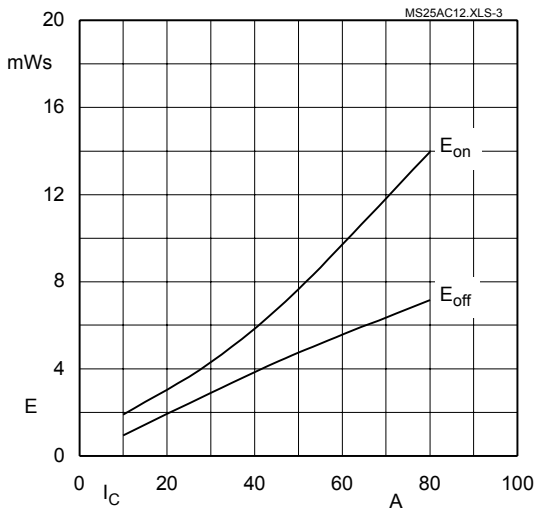


Fig. 3 Turn-on /-off energy =  $f(I_c)$

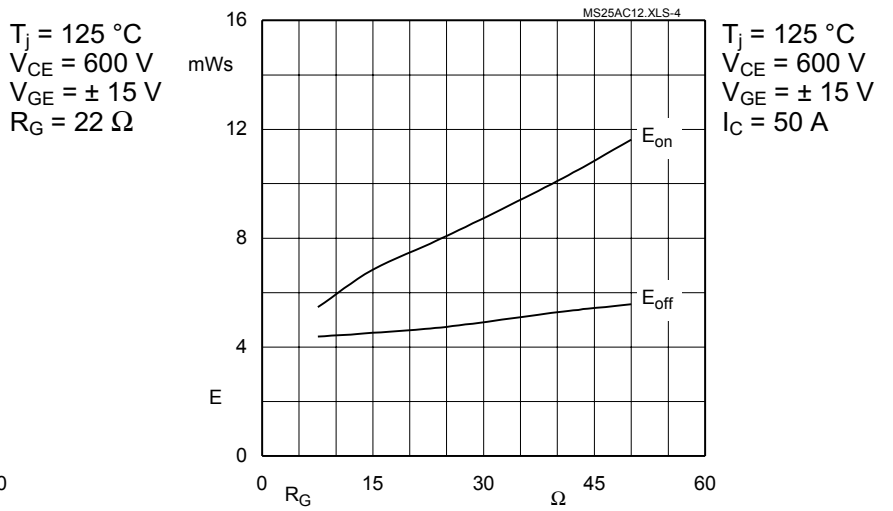


Fig. 4 Turn-on /-off energy =  $f(R_G)$

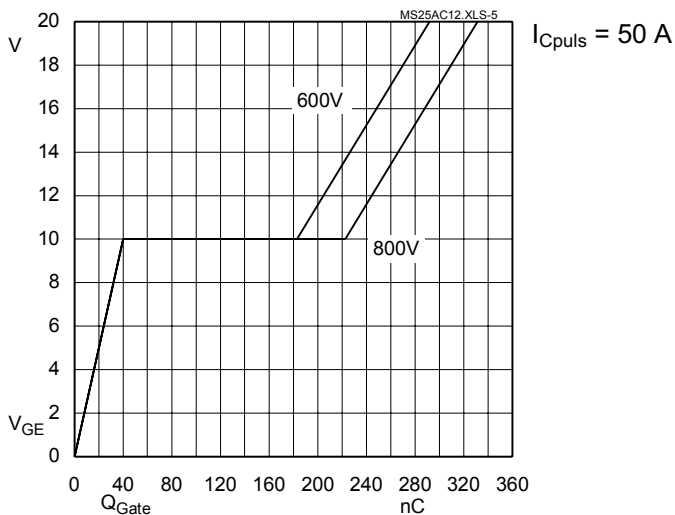


Fig. 5 Typ. gate charge characteristic

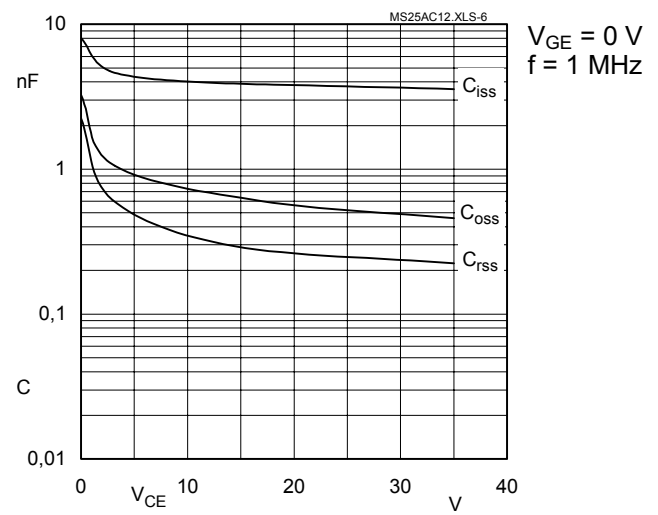


Fig. 6 Typ. capacitances vs.  $V_{CE}$

# MiniSKiiP 1200 V

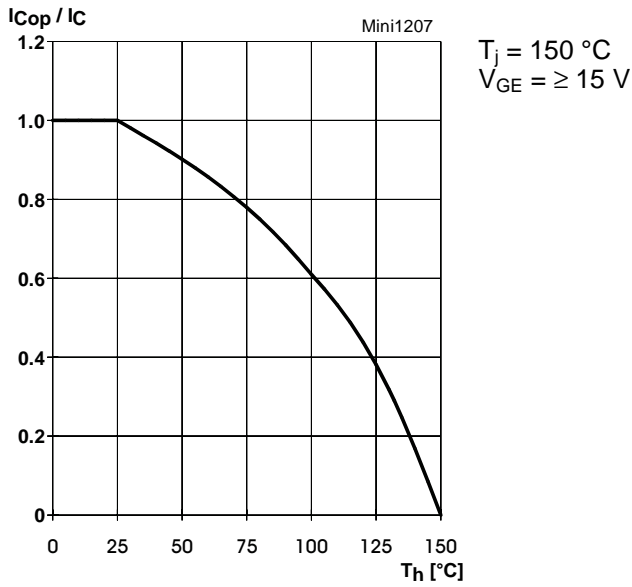


Fig. 7 Rated current of the IGBT  $I_{COp} / I_C = f(T_h)$

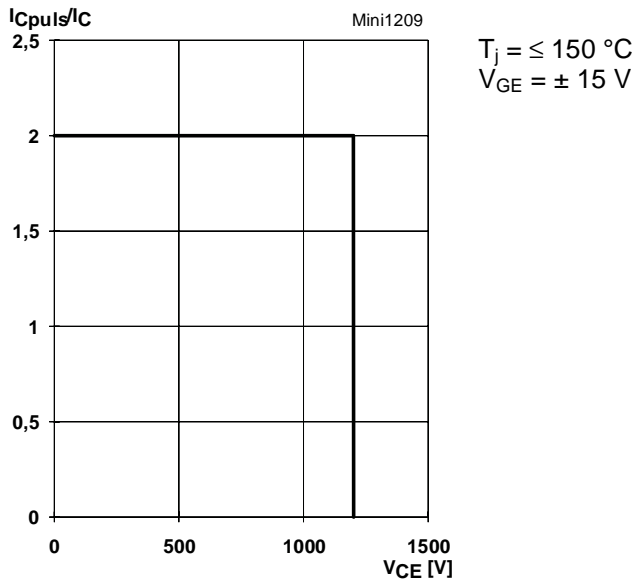


Fig. 9 Turn-off safe operating area (RBSOA) of the IGBT



Fig. 10 Safe operating area at short circuit of the IGBT

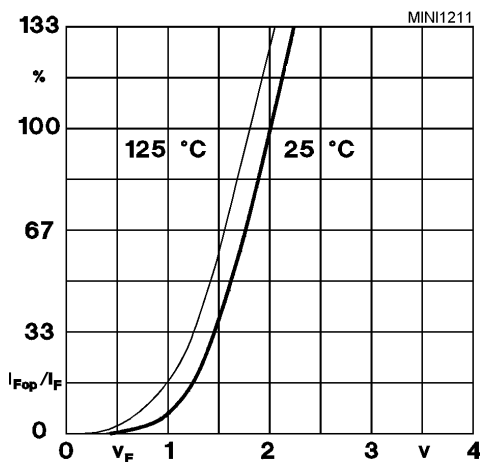


Fig. 11 Typ. freewheeling diode forward characteristic

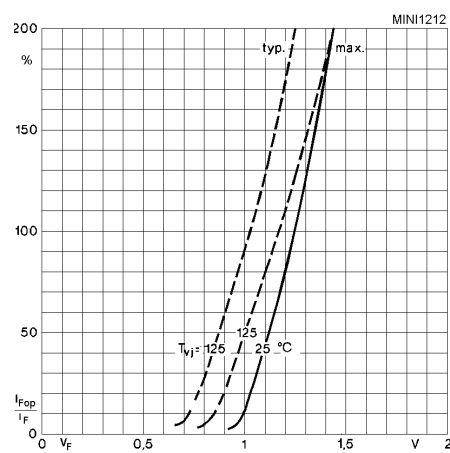


Fig. 12 Forward characteristic of the input bridge diode

# MiniSKiiP 2

SKiiP 23 AC 12 T3  
SKiiP 25 AC 12 T2

