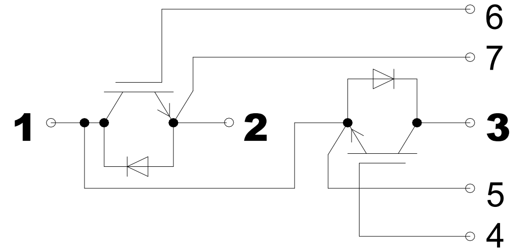
SGG150NF120UC2

IGBT Modules

SGG150NF120UC2



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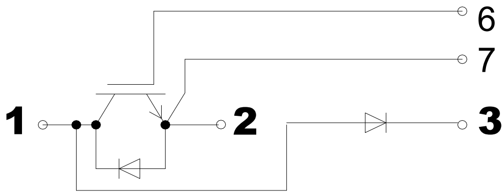

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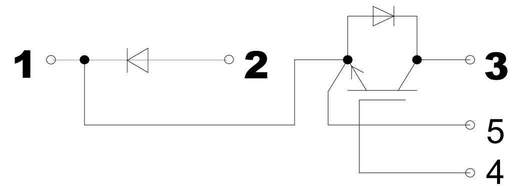

Symbol	Test Condition	Value	Unit
IGBT			
V_{CES}		1200	V
I_C	T_C = 100°C per chip	150	A
V_{GES}		±20	V
T_{vj} (T_{stg})		-40 ~ +150(125)	°C
P_{tot}		500	W
INVERSE DIODE			
I_F	T_C=25°C per chip	150	A
I_{FM}		300	A
V_{RRM}		1200	V
I^2t	T_j=125°C, t=10ms, V_R=0V	4600	A^2S

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Symbol	Test Conditions	Min	Typ	Max	Unit
IGBT	**Tc = 25°C unless otherwise specified**				
$V_{GE(th)}$	VGE=VCE, IC = 1mA	4.5	5.5	6.7	V
I_{CES}	VGE = 0; VCE=VCES; Tj=25(125)°C			1	mA
$V_{CE(TO)}$	Tj=25(125)°C		1.0(0.9)	1.2(1.1)	V
r_{CE}	VGE=15V		9(12)	12(15)	mΩ
$V_{CE(sat)}$	IC=150A; VGE=15V; chip level		2.1	2.5	V
C_{ies}	VGE=0V, VCE=25V, f=1MHz		9.20		nF
C_{oes}			1.00		
C_{res}			0.93		
LCE				29	nH
RCC'+EE'	Termial to Case， Tc=25°C		0.75		mΩ
$t_{d(on)}$	Vcc = 600V, IC = 150A RGON = RGOFF = 10Ω Tj=125°C VGE=±15V		185		ns
t_r			50		ns
$t_{d(off)}$			590		ns
t_f			50		ns
E_{on}/E_{off}			11.50/9.30		mJ
INVERSE DIODE	**Tc = 25°C unless otherwise specified**				
VF	IF =150A; VGE=0V; Tj = 25°C		2.0	2.5	V
Qrr	IF=150A; VR=300V; Tj=25°C di/dt = 3500A/us, VGE=-15V		14.5		μC
IRRM			130		A
Erec			4.80		mJ
THERMAL CHARACTERISTICS					
Rth(j-c)	per IGBT			0.125	K/W
Rth(j-c)D	per FRD			0.550	K/W
$R_{th(c-s)}$	per module			0.101	K/W
Ms		2.5		4	Nm
Weight			325		g

Features

- Planar Gate Field Stop (SPT$^+$) Technology IGBT
- Fast Recovery Free Wheeling Diode
- Low Switching Losses
- Vce(sat) with positive temperature coefficient
- Fast Switching and short tail current
- Switched mode power supplies at f_{sw}>20KHz
- Resonant inverters up to 100KHz
- Electronic Welders at f_{sw}>20KHz

Application

- Welding inverters
- Inductive Heating

Advantages

- Space and weight savings
- Reduced protection circuits

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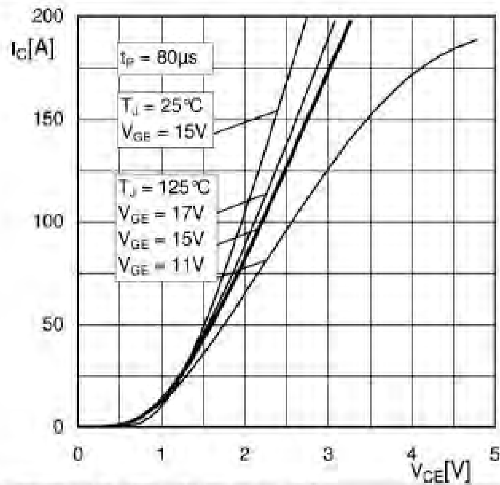

Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

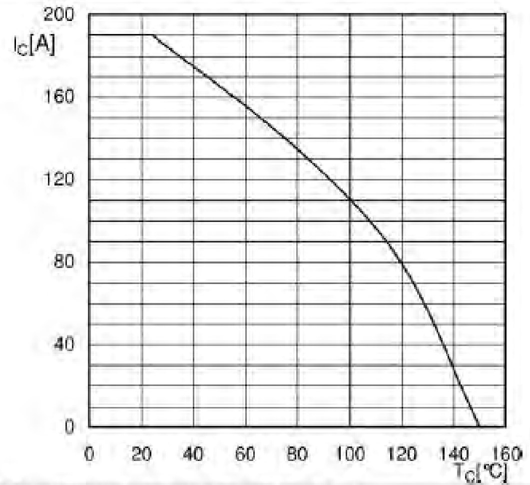

Fig. 2 Rated current vs. temperature $I_C = f(T_C)$

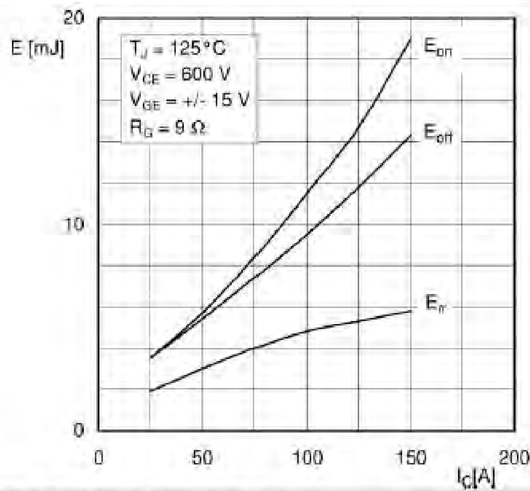

Fig. 3 Typ. turn-on /-off energy = f (I_C)

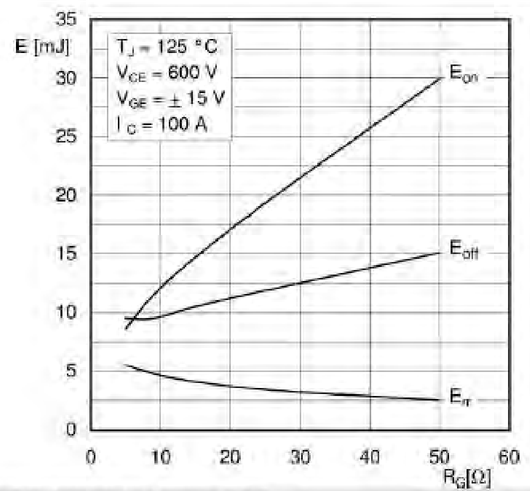

Fig. 4 Typ. turn-on /-off energy = f (R_G)

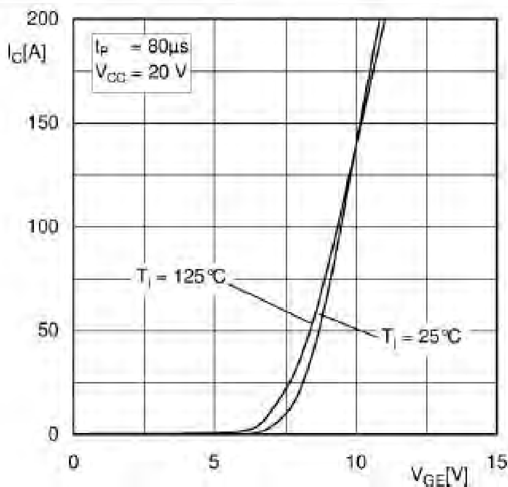

Fig. 5 Typ. transfer characteristic

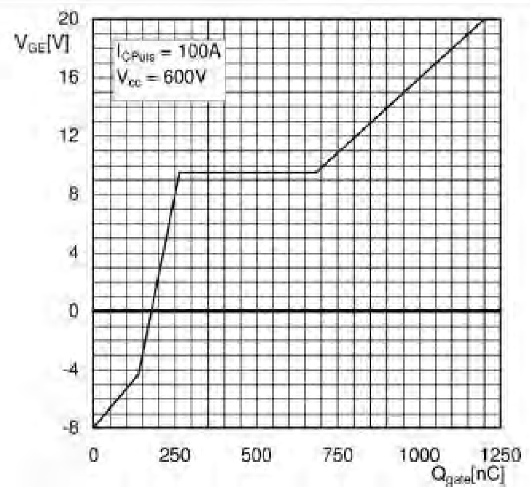

Fig. 6 Typ. gate charge characteristic

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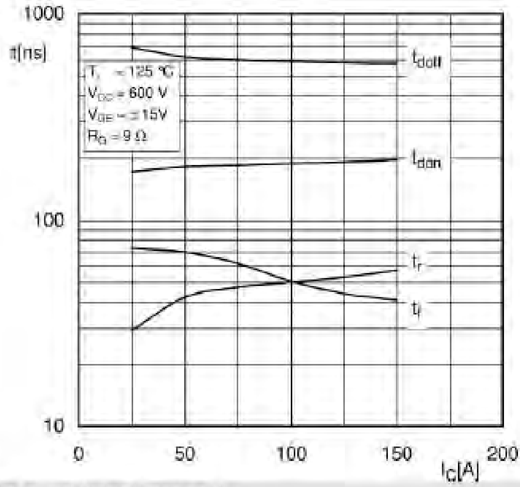

Fig. 7 Typ. switching times vs. I_C

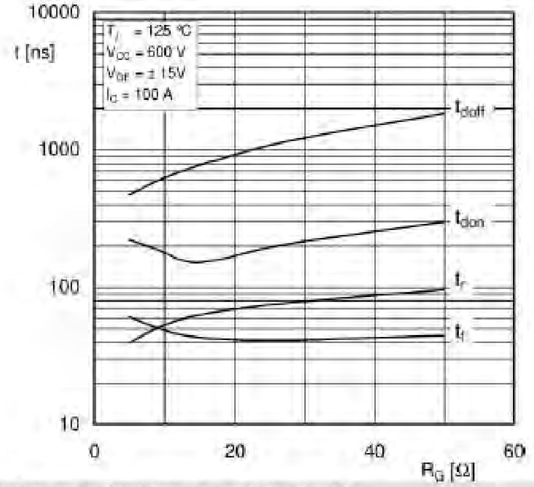

Fig. 8 Typ. switching times vs. gate resistor R_G

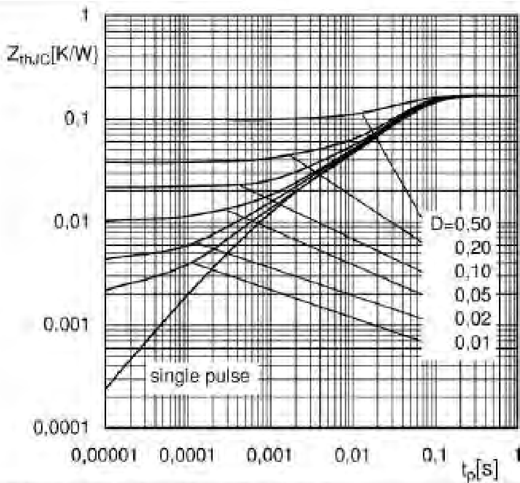

Fig. 9 Transient thermal impedance of IGBT

$Z_{thp(j-c)} = f(t_p)$; $D = t_p/t_c = t_p{}^*f$

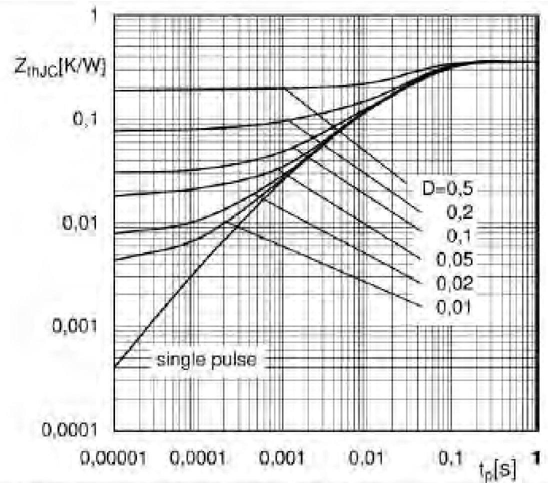

Fig. 10 Transient thermal impedance of FWD

$Z_{thp(j-c)} = f(t_p)$; $D = t_p/t_c = t_p{}^*f$

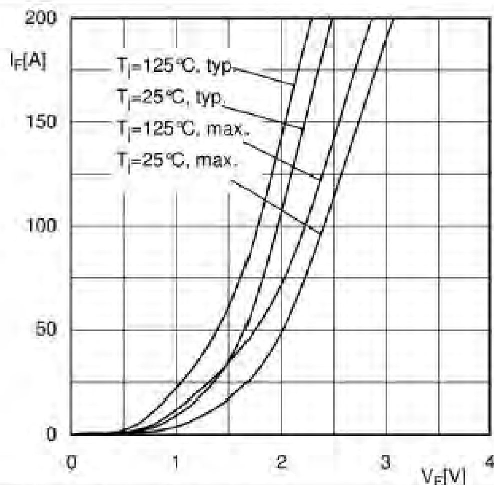

Fig. 11 FWD diode forward characteristic

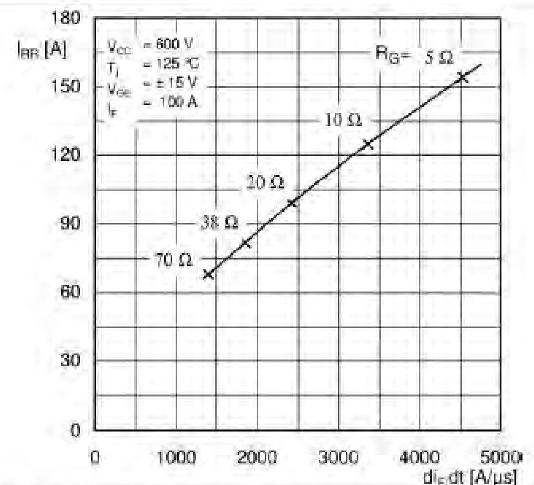

Fig. 12 Typ. FWD diode peak reverse recovery current

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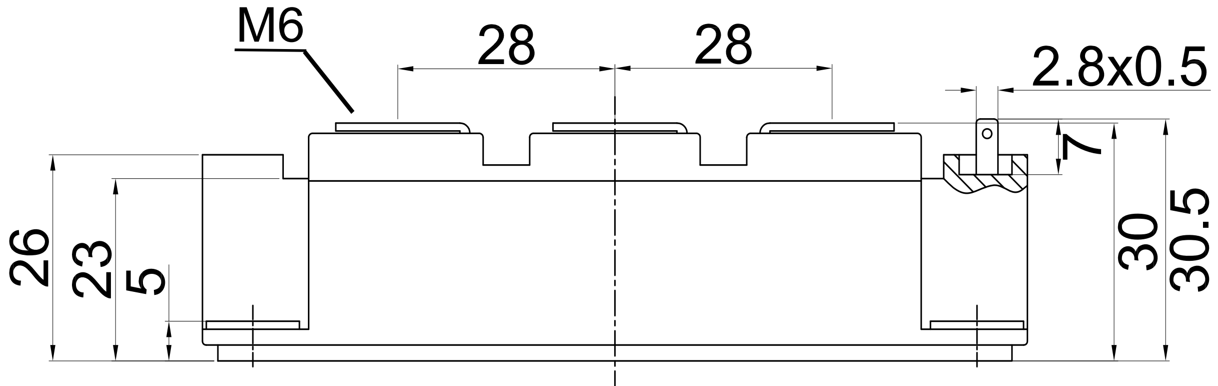

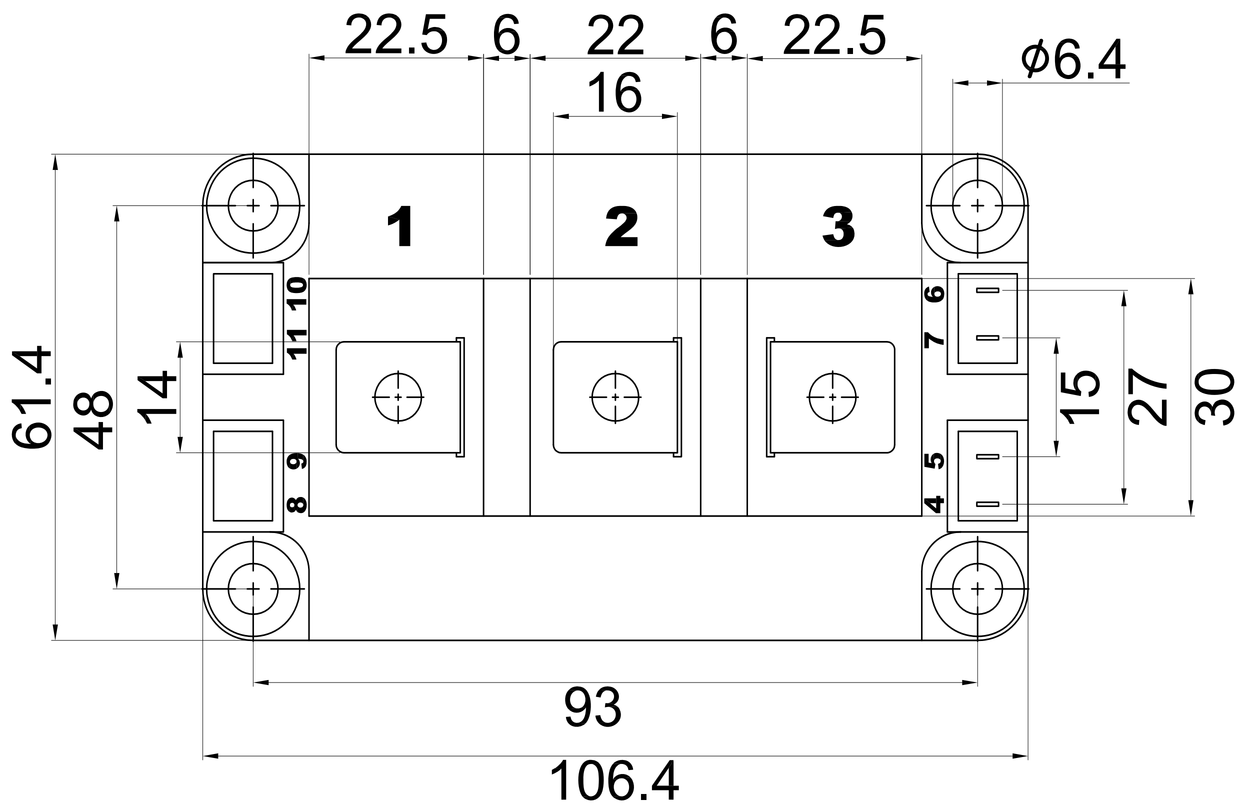

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