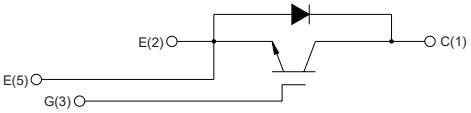
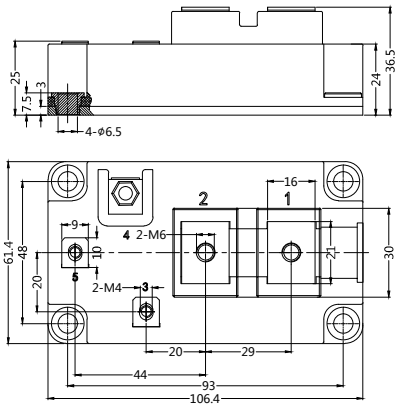
SGO600N125UC3

IGBT Modules

SGO600N125UC3



Dimensions in mm (1mm = 0.0394")



T_C = 25°C, unless otherwise specified

Symbol	Conditions	Values	Units
IGBT			
V_{CES}		1200	V
I_{Cnom}	T_C= 25(80)°C	600(400)	A
I_{CRM}	T_C= 25°C, t_P =1ms	800	A
V_{GES}		_+20	V
T_{Vj}		-40...+175	°C
Inverse Diode			
I_F	T_C= 25(80)°C	600(400)	A
I_{FRM}	T_C= 25°C, t_P =1ms	800	A
I_{FSM}	t_P =10ms; sin.;T_j=25°C	3600	A
Module			
$I_{t(RMS)}$	$T_{teminal}$ = 80°C	500	A
T_{stg}		-40~125	°C
V_{Isol}	AC, 1min	4000	V

Features

- NPT 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

- This type IGBT can be direct replacement for SEMIKRON **SGO600N125UC3**

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Characteristics T_C = 25°C, unless otherwise specified

Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	V_{GE} = V_{CE}, I_C =18mA	4.5	5.5	6.5	V
I_{CES}	V_{GE} = 0; V_{CE} = V_{CES}; T_j = 25(125)°C			1.0	mA
$V_{CE(TO)}$	T_j = 25°C		1.50	1.70	V
r_{CE}	V_{GE} = 15V, T_j = 25(150°C)		4.8(5.9)	5.2(6.7)	mΩ
$V_{CE(sat)}$	I_C =400A; V_{GE} = 15V		3.20	3.75	V
C_{ies}	under following conditions		37		
C_{oes}	V_{GE} = 0, V_{CE} = 25V, f = 1MHz		3.75		nF
C_{res}			3.45		
L_{CE}			20		nH
$R_{CC'+EE'}$	res., terminal-chip T_C = 25(125)°C		0.18(0.22)		mΩ
$t_{d(on)}$	under following conditions:		80		ns
t_r	V_{CC} = 600V, I_C = 400A		70		ns
$t_{d(off)}$	R_{Gon} = R_{Goff} = 0.5Ω, T_j = 125°C		560		ns
t_f	V_{GE} = ± 15V		59		ns
E_{on}(E_{off})			30(22)		mJ
Inverse Diode under following conditions:					
V_F = V_{EC}	I_F =400A; V_{GE} = 0V; T_j = 25(125)°C		2.10(1.85)	2.57(2.37)	V
V_{FO}	T_j = 25(125)°C		1.10(0.85)	1.50(1.20)	V
r_F	T_j = 25(125)°C		2.30(2.73)	2.87(2.90)	mΩ
I_{RRM}	I_F = 400A; T_j = 125°C		464		A
Q_{rr}	di/dt = 4450A/us		63		uC
E_{rr}	V_{GE} = 15V		29		mJ
FWD under following conditions:					
V_F = V_{EC}	I_F =400A; V_{GE} = 0V; T_j = 25(125)°C		2.10(1.85)	2.57(2.37)	V
V_{FO}	T_j = 25(125)°C		1.10(0.85)	1.50(1.20)	V
r_F	T_j = 25(125)°C		2.30(2.73)	2.87(2.90)	mΩ
I_{RRM}	I_F = 400A; T_j = 125°C		464		A
Q_{rr}	di/dt = 4450A/us		63		uC
E_{rr}	V_{GE} = 15V		29		mJ
Thermal Characteristics					
$R_{th(j-c)}$	per IGBT			0.042	K/W
$R_{th(j-c)D}$	per Inverse Diode			0.090	K/W
$R_{th(c-s)}$	per module			0.038	K/W
Mechanical Data					
M_s	to heatsink M6	3		5	Nm
M_t	to terminals M6(M4)	3(1.1)		5(2.0)	Nm
Weight	typical			330	g

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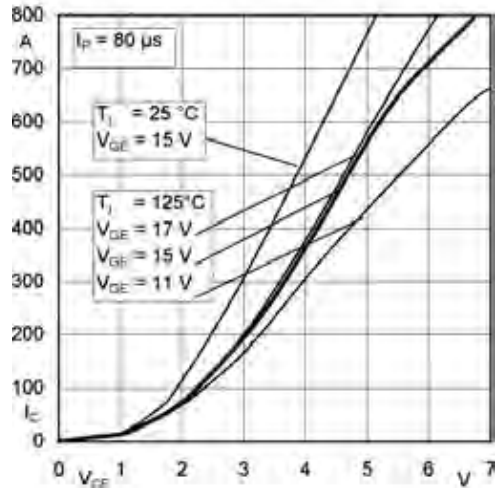

Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

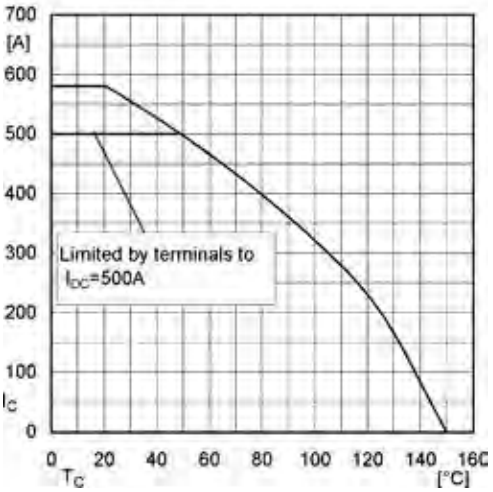

Fig. 2 Rated current vs. temperature $I_C = f(T_C)$

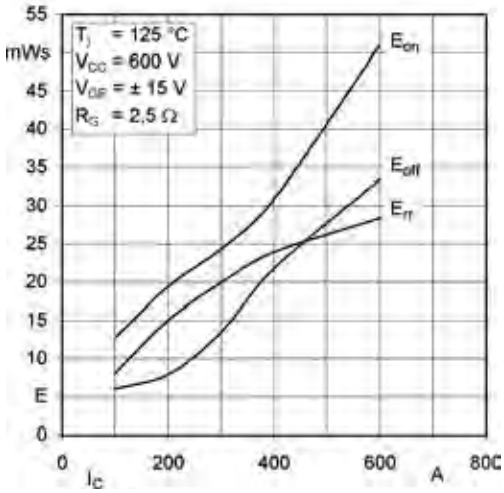

Fig. 3 Typ. turn-on /-off energy = f (I_C)

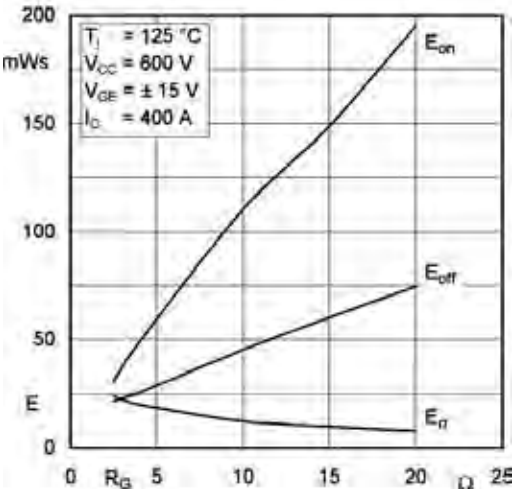

Fig. 4 Typ. turn-on /-off energy = f (R_G)

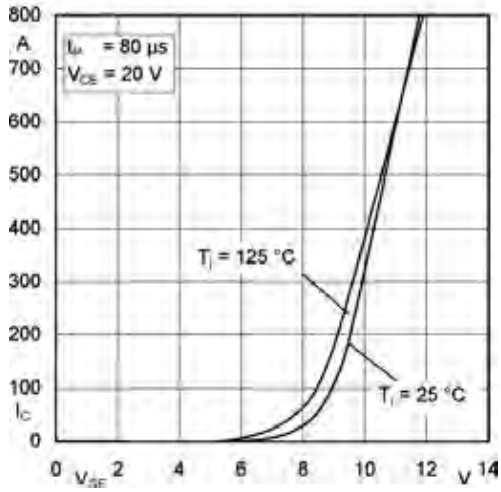

Fig. 5 Typ. transfer characteristic

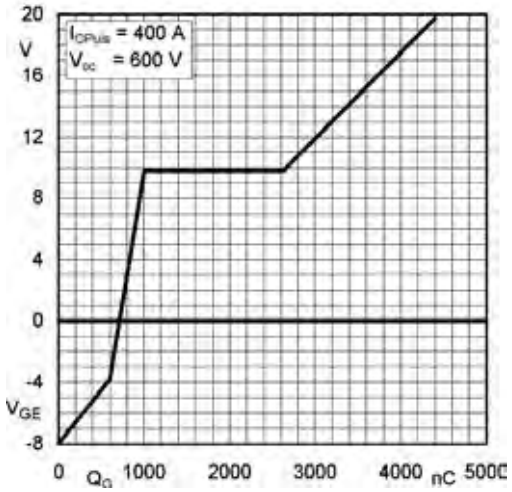

Fig. 6 Typ. gate charge characteristic

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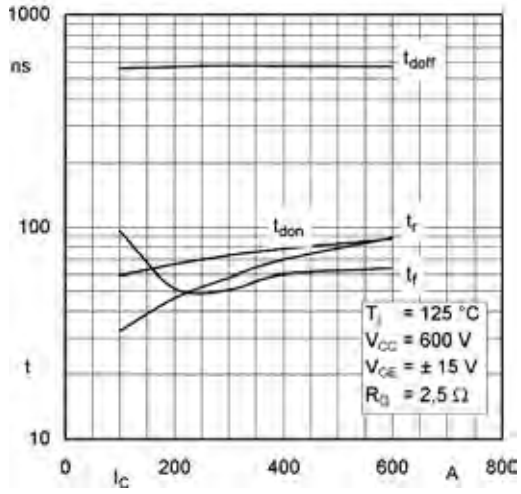

Fig. 7 Typ. switching times vs. I_C

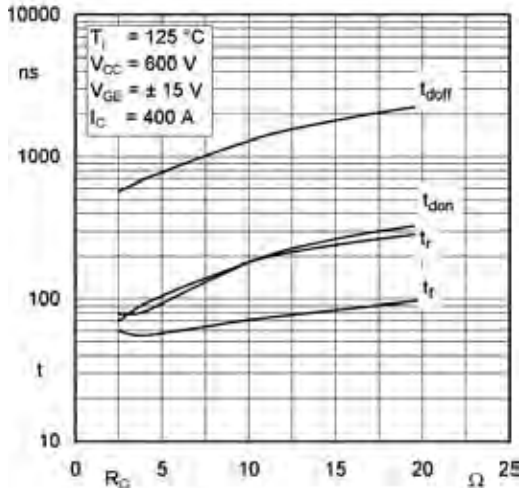

Fig. 8 Typ. switching times vs. gate resistor R_G

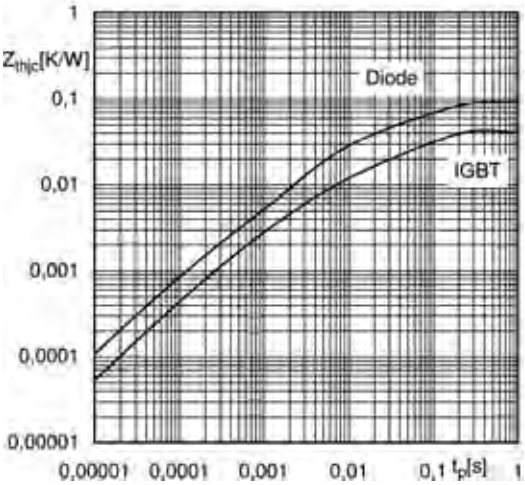

Fig. 9 Transient thermal impedance

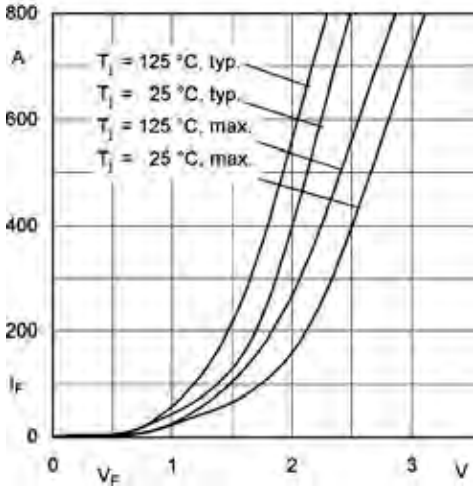

Fig. 10 FWD diode forward characteristic

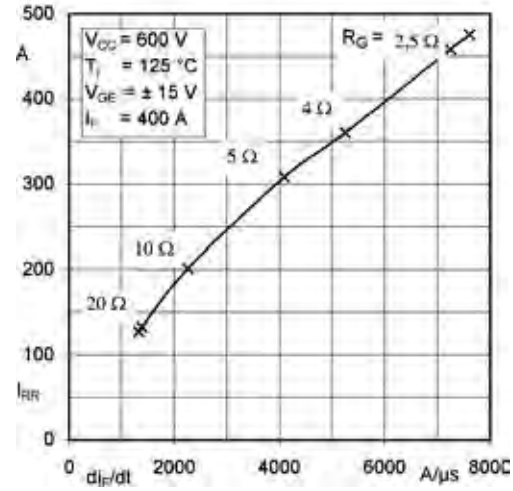

Fig. 11 Typ. FWD diode peak reverse recovery current

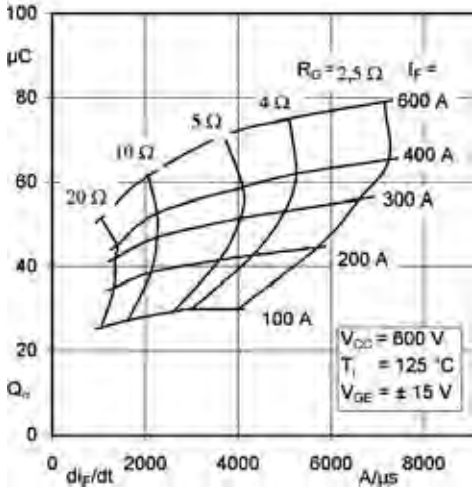

Fig. 12 Typ. FWD diode peak reverse recovery charge

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