SML300HB12GG

Attributes:
-Aerospace build standard
-High reliability
-Lightweight
-Cu and metal matrix base plate versions (pin finned versions available)
-AlN isolation
-Trench gate igbts



Maximum rated values/Electrical Properties

Collector-emitter voltage		V_{ce}	1200	V
DC collector current	Tc=70C, Tvj=175C Tc=25C,Tvj=175C	I_c, nom Ic	320 455	A
Repetitive peak collector current	tp=1msec,Tc=80C	I_{crm}	600	A
Total power dissipation	Tc=25C	P_{tot}	850	W
Gate-emitter peak voltage		V_{ges}	+/-20	V
DC forward diode current		I_f	400	A
Repetitive peak forward current	tp=1msec	I_{frm}	800	A
I^2t value per diode	Vr=0V, tp=10msec, Tvj=125C Tvj=150C	I^2_t	11000 10500	A^2sec
Isolation test voltage	RMS, 50Hz, t=1min	V_{isol}	2500	V

Collector-emitter saturation voltage	Ic=300A,Vge=15V, Tc=25C Ic=300A,Vge=15V,Tc=125C Ic=300A,Vge=15V,Tc=150C	$V_{ce(sat)}$		1.7 2.0	2.15 2.45	V
Gate threshold voltage	Ic=6.4mA,Vce=Vge, Tvj=25C	$Vge_{(th)}$	5.0	5.8	6.5	V
Input capacitance	f=1MHz,Tvj=25C,Vce=25V, Vge=0V	C_{ies}		21.5		nF
Reverse transfer capacitance	f=1MHz,Tvj=25C,Vce=25V, Vge=0V	C_{res}		0.98		nF
Collector emitter cut off current	Vce=1200V,Vge=0V,Tvj=25C Vce=1200,Vge=0V,Tvj=125C	I_{ces}			0.3	mA mA
Gate emitter cut off current	Vce=0V,Vge=20V,Tvj=25C	I_{ges}			400	nA

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders

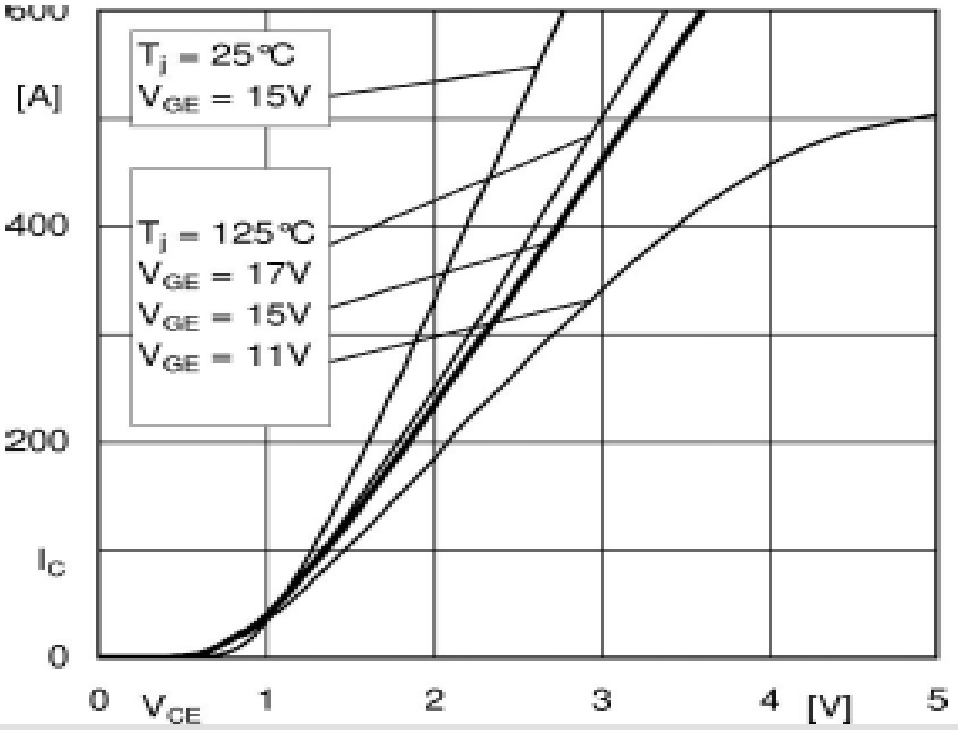
Turn on delay time	Ic=300A, Vcc=600V Vge=+/-15V,Rg=2Ω,Tvj=125C	$t_{d,on}$		280		nsec
Rise time	Ic=300A, Vcc=600V Vge=+/-15V,Rg=2Ω,Tvj=125C	tr		65		nsec
Turn off delay time	Ic=300A, Vcc=600V Vge=+/-15V,Rg=2Ω,Tvj=125C	$t_{d,off}$		630		nsec
Fall time	Ic=300A, Vcc=600V Vge=+/-15V,Rg=2Ω, Tvj=125C	t_f		130		nsec
Turn on energy loss per pulse	Ic=300A,Vce=600V,Vge=15V Rge=2Ω,L=30nH Tvj=125C	E_{on}		35		mJ
Turn off energy loss per pulse	Ic=300A,Vce=600V,Vge=15V Rge=2Ω,L=30nH Tvj=125C	E_{off}		45		mJ
SC Data	tp≤10µsec, Vge≤15V Vcc=360V, Tvj=25C $Vce_{(max)}$=Vces-Lσdi/dt Tvj=150C	I_{sc}		2800 2000		A A
Stray Module inductance		$L_{σce}$		18		nH
Terminal-chip resistance		R_c		1.0		mΩ

Diode characteristics

Forward voltage	Ic=300A,Vge=0V, Tc=25C Ic=300A,Vge=0V, Tc=125C	V_f		1.6 1.6	1.8 1.8	V V
Peak reverse recovery current	If=300A, -di/dt=6200A/µsec Vce=300V,Vge=-10V,Tvj=125C	I_{rm}		375		A
Recovered charge	If=300A, -di/dt=6200A/µsec Vce=600V,Vge=-10V,Tvj=125C	Qr		75		µC
Reverse recovery energy	If=300A, -di/dt=6200A/µsec Vce=600V,Vge=-10V,Tvj=125C	E_{rec}		33		mJ

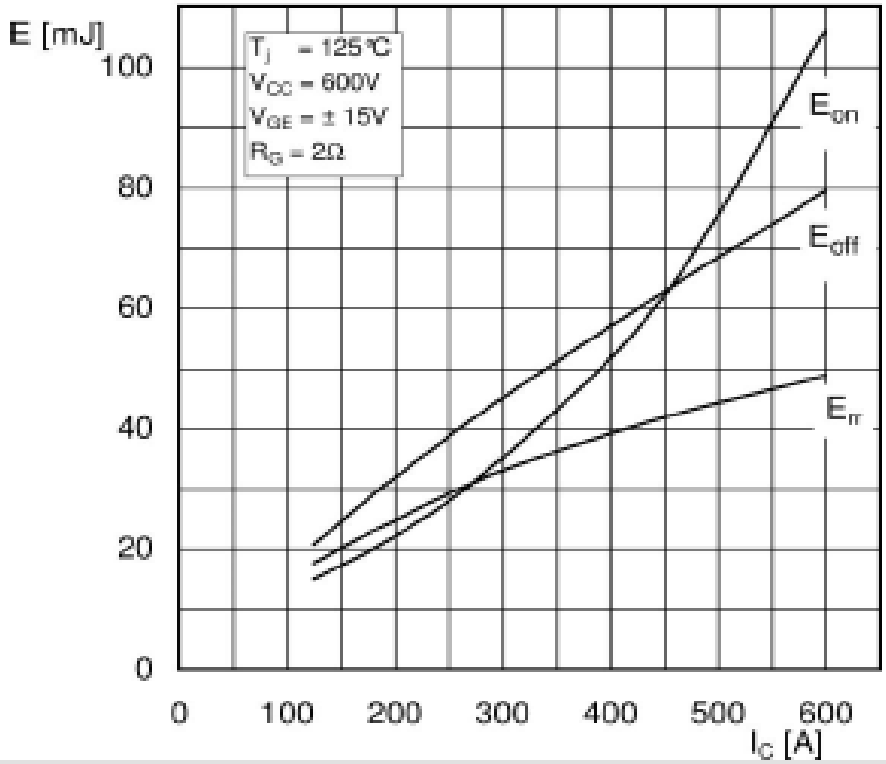
Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders

Thermal Properties			Min	Typ	Max	
Thermal resistance junction to case (MMC)	Igbt Diode	$R_{\theta J-C}$			0.042 0.1	K/W
Thermal resistance case to heatsink		$R_{\theta C-hs}$		0.045		K/W
Maximum junction temperature		Tvj			175	C
Maximum operating temperature		Top	-55		175	C
Storage Temperature		Tstg	-55		175	C

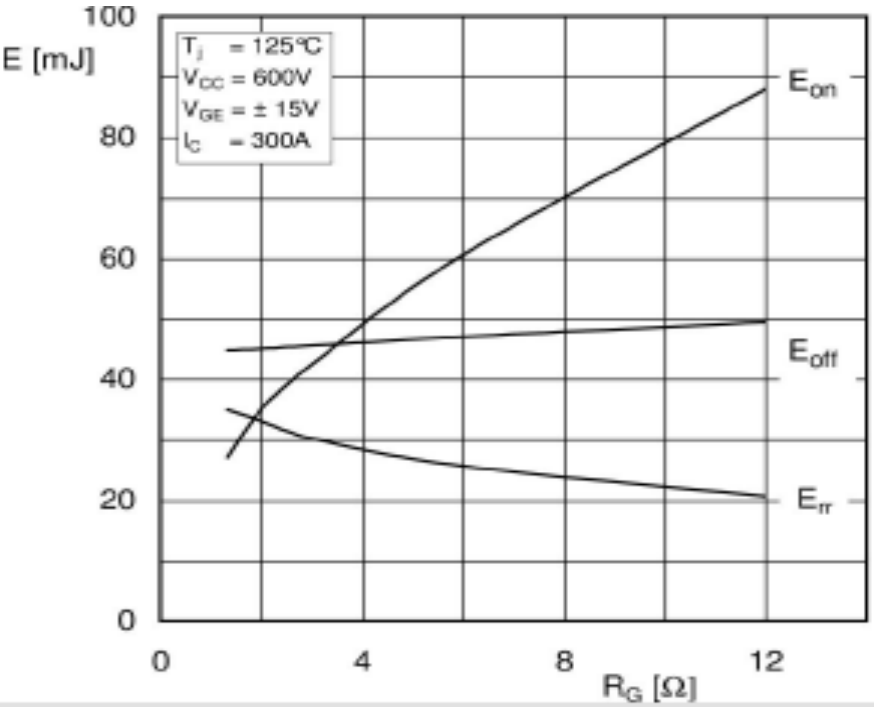


Typ. output characteristic, inclusive $R_{CC'+EE'}$

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders

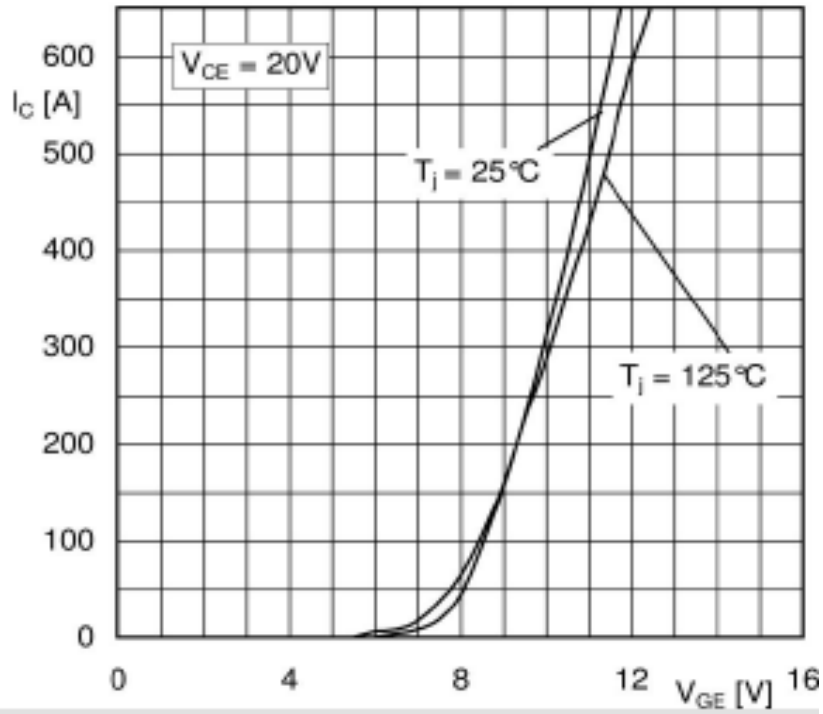


Typ. turn-on /-off energy = f (I_C)

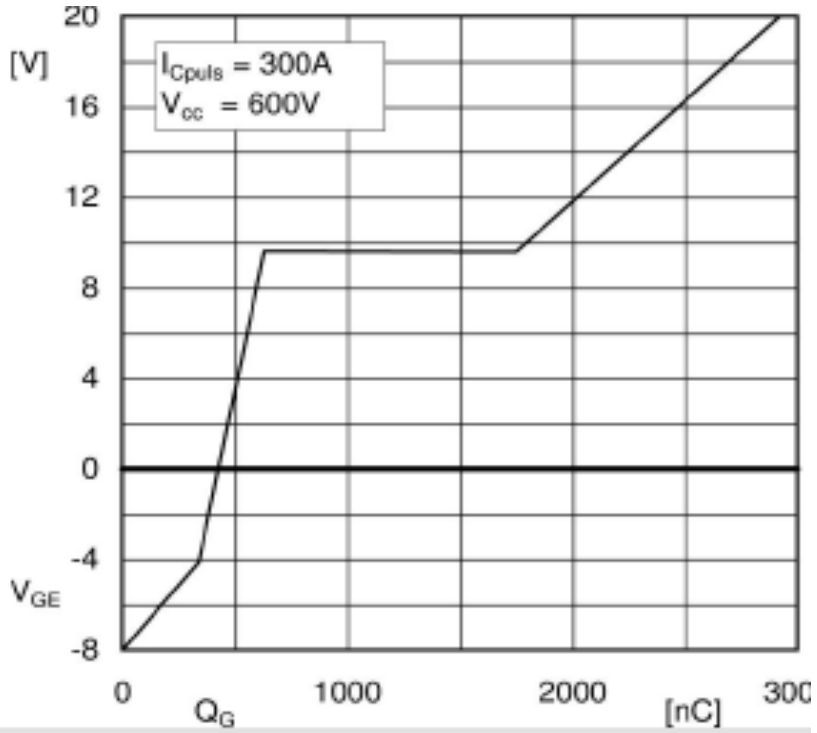


Typ. turn-on /-off energy = f (R_G)

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders

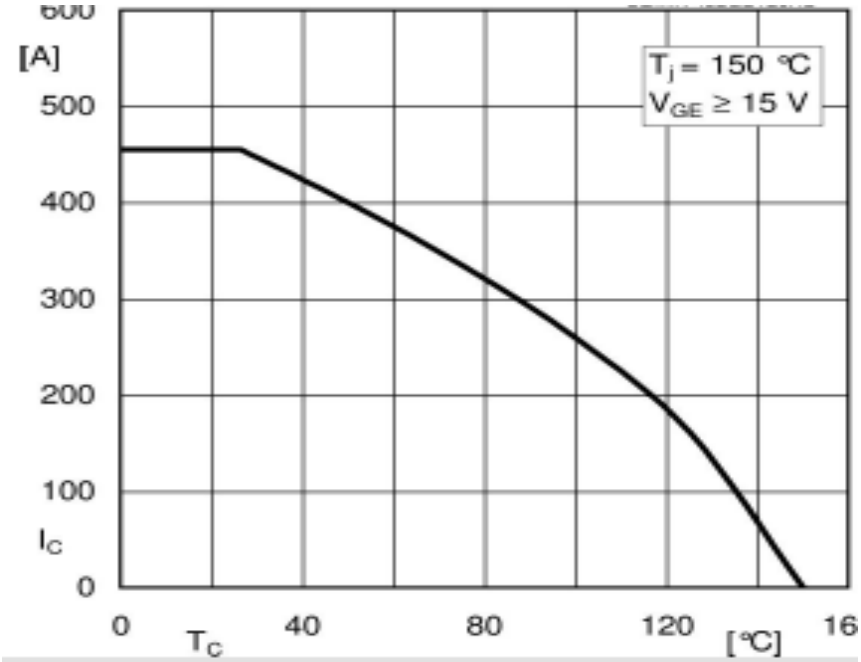


Typ. transfer characteristic

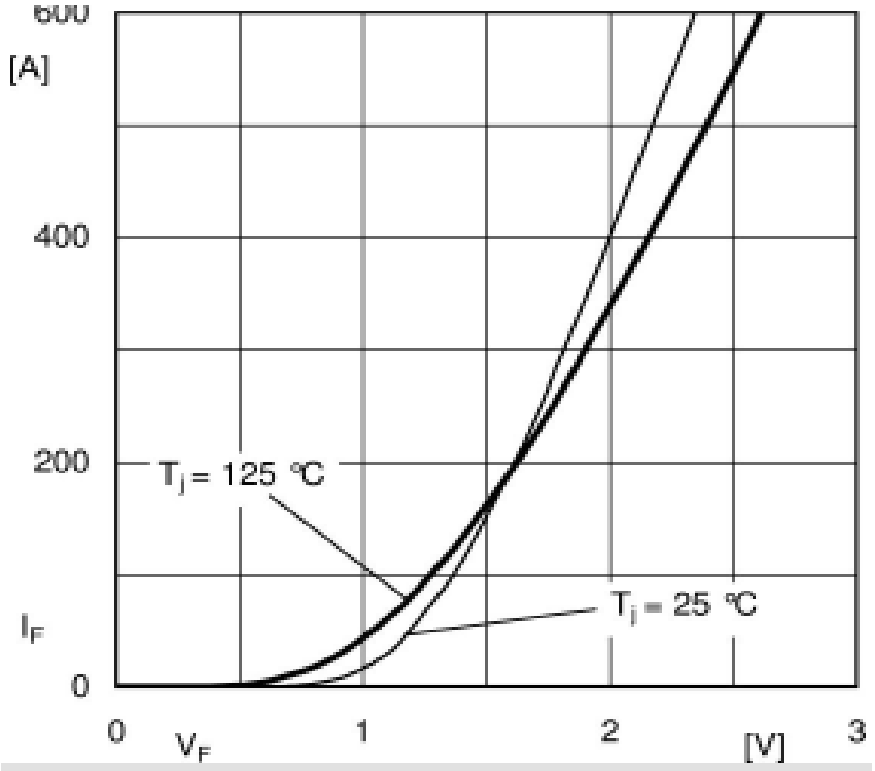


Typ. gate charge characteristic

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders

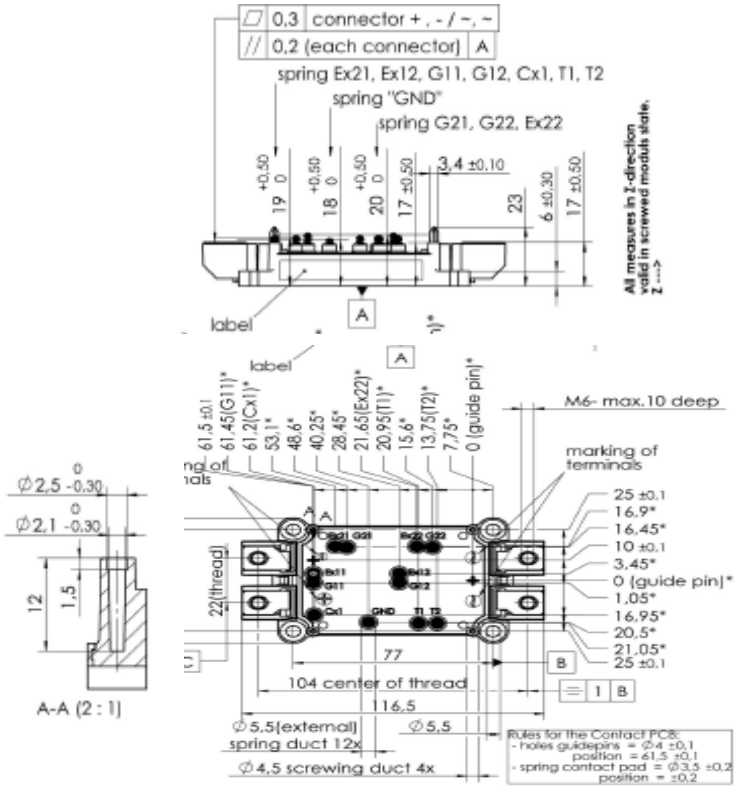


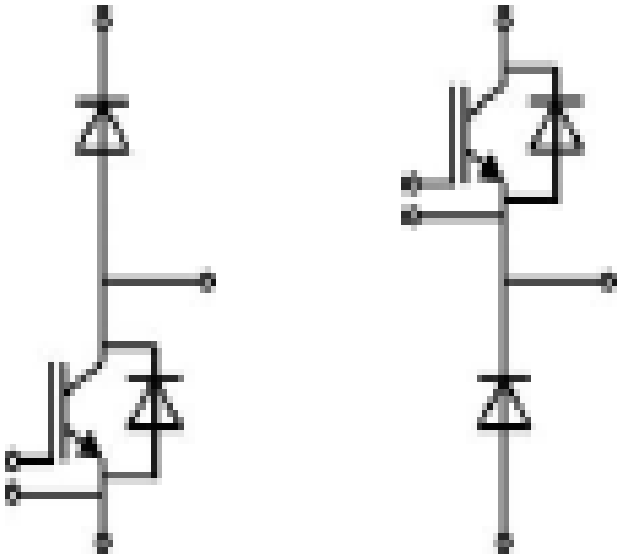
Rated current vs. temperature $I_C = f(T_C)$



Typ. CAL diode forward charact., incl. $R_{CC'+EE'}$

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders





GAL GAR

CIRCUIT DIAGRAM

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders