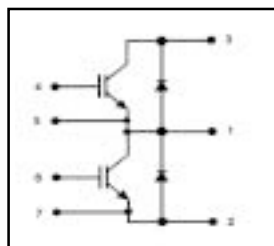


Features

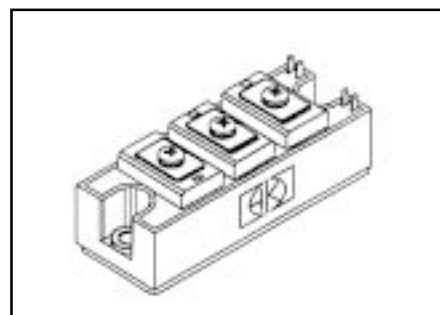
- Low loss, rugged IGBT SPT⁺ technology
- UltraFast optimized high operating frequencies 8-20 kHz in hard switching, >100 kHz in resonant mode.
- Smooth switching for good EMC
- HEXFRED™ antiparallel diodes with ultra-soft recovery
- Industry standard package
- UL recognition pending
- Short circuit rated 10 μs



$V_{CES}=1200V$
 $V_{CE(on) typ.}=1.8V$
@ $V_{GE}=15V, I_c=75A$

Benefits

- Increased operating efficiency
- Direct mounting to heatsink
- Performance optimized for power conversion: UPS, SMPS, Welding, Motor Control
- Lower EMI, requires less snubbing



Absolute Maximum Ratings

	Parameter	Max.	Units
V_{CES}	Collector- to- Emitter Voltage	1200	V
$I_c @ T_c=25^\circ C$	Continuous Collector Current	100	A
$I_c @ T_c=85^\circ C$	Continuous Collector Current	75	
I_{CM}	Pulsed collector Current	150	
I_{LM}	Peak switching Current	150	
I_{FM}	Peak Diode Forward Current	150	
V_{GE}	Gate- to- Emitter Voltage	± 20	V
V_{ISOL}	RMS Isolation Voltage, Any Terminal To Case, t=1 min	2500	W
$P_D @ T_c=25^\circ C$	Maximum Power Dissipation	625	
$P_D @ T_c=85^\circ C$	Maximum Power Dissipation	325	
T_J	Operating Junction Temperature Range	-40 to +150	°C
T_{STG}	Storage Temperature Range	-40 to +125	

Thermal / Mechanical Characteristics

	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to- Case- IGBT	-	0.2	°C/W
$R_{\theta JC}$	Thermal Resistance, Junction-to- Case- Diode	-	0.35	
$R_{\theta CS}$	Thermal Resistance, Case-to- Sink- Module	0.1	-	N.m
	Mounting Torque, Case-to-Heatsink	-	4.0	
	Mounting Torque, Case-to-Terminal 1,2 & 3	-	3.0	
	Weight of Module	200	-	g

GA100TS120ST

Electrical Characteristics @ T_J=25°C(unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
V _{(BR)CES}	Collector-to-Emitter Breakdown Voltage	1200	—	—	V	V _{GE} =0V, I _C =1mA
V _{CE(ON)}	Collector-to-Emitter Voltage	1.7	1.8	2.3		V _{GE} =15V, I _C =75A
		—	2.0	—		V _{GE} =15V, I _C =75A, T _J =125°C
V _{GE(th)}	Gate Threshold Voltage	5.0	6.2	7.0		I _C =3.0mA, V _{CE} =V _{GE}
DV _{GE(th)DTJ}	Temperature Coeff. of Threshold Voltage	—	-11	—	mV/°C	V _{CE} =V _{GE} , I _C =1.25mA
g _{fe}	Forward Transconductance	—	107	—	S	V _{CE} =25V, I _C =75 A
I _{CES}	Collector - to - Emitter Leaking Current	—	—	0.1	mA	V _{GE} =0V, V _{CE} =1200V
		—	0.3	—	mA	V _{GE} =0V, V _{CE} =1200V, T _J =125°C
V _{FM}	Diode Forward Voltage - Maximum	1.7	1.9	2.3	V	I _F =75 A, V _{GE} =0V
		—	1.9	—		I _F =75 A, V _{GE} =0V, T _J =125°C
I _{GES}	Gate - to - Emitter Leakage Current	-200	—	200	nA	V _{GE} =± 20V, T _J =125°C

Dynamic Characteristics - T_J=125°C (unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
Q _g	Total gate charge (turn - on)	—	-	—	nC	CC= 600V, V _{GE} =-15--15V
Q _{ge}	Gate - Emitter charge (turn - on)	—	780	1100		I _C =75 A
Q _{gc}	Gate - Collector charge (turn - on)	—	-	-		T _J =25°C
t _{d(on)}	Turn - On Delay Time	—	160	—	nS	R _G =15Ω
t _r	Rise Time	—	65	—		I _C = 75 A
t _{d(off)}	Turn - Off Delay Time	—	500	—		V _{CC} =600V
t _f	Fall Time	—	70	—		V _{GE} =± 15V
E _{on}	Turn - On Switching Energy	—	10.3	—	mJ	L _σ =60nH
E _{off(1)}	Turn - Off Switching Energy	—	7.7	—		inductive load
E _{ts(1)}	Total Switching Energy	—	18	--		
C _{ies}	Input Capacitance	—	5.52	—	nF	V _{GE} = 0V
C _{oes}	Output Capacitance	—	0.4	—		V _{CC} = 25V
C _{res}	Reverse Transfer Capacitance	—	0.26	—		f=1MHZ, T _J =25°C
t _{rr}	Diode Reverse Recovery Time	—	400	—	nS	I _F = 75 A
I _{rr}	Diode Peak Reverse Current	—	70	—	A	T _J =125°C
Q _{rr}	Diode Recovery Charge	—	18	—	μC	L _σ =50nH
di(rec)M/dt	Diode Peak Rate of Fall of Recovery During t _b	—	1916	—	A/μs	V _{CC} =600V, di/dt=1600A/μs Inductive Load
I _{sc}	Short circuit current	—	420	—	A	V _{CC} =900V, V _{GE} =15V t _{psc} <10μS, V _{CEM} <1200V

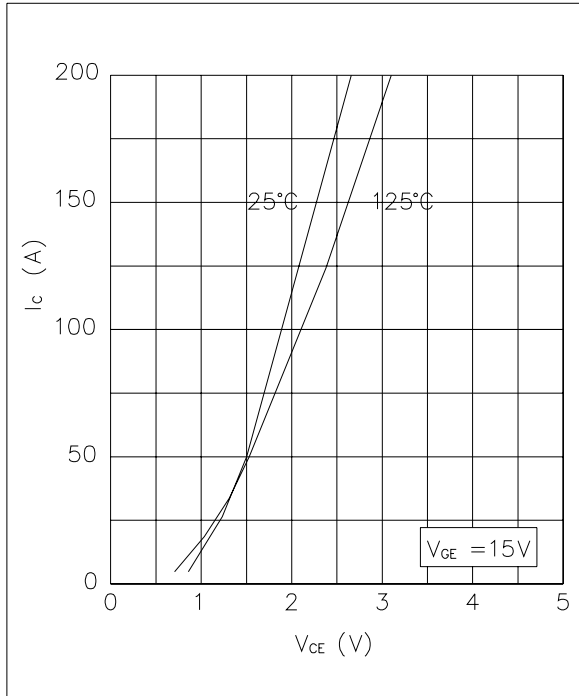


Fig.1 Typical on-state characteristics

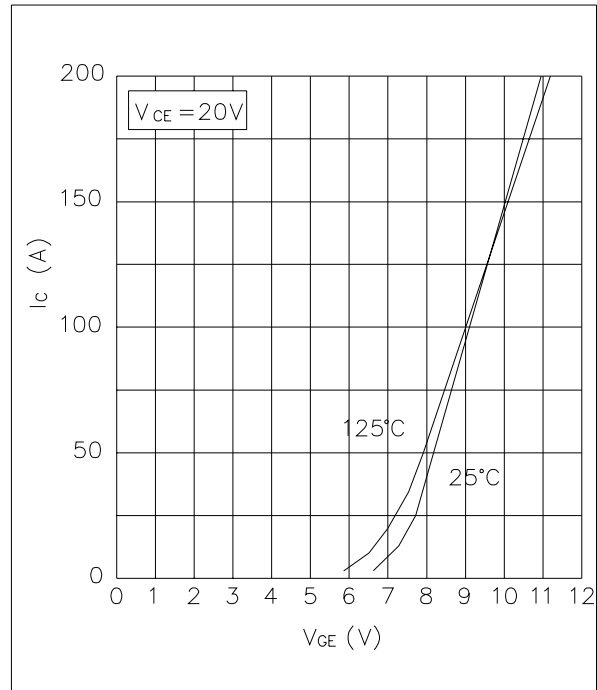


Fig.2 Typical transfer characteristics

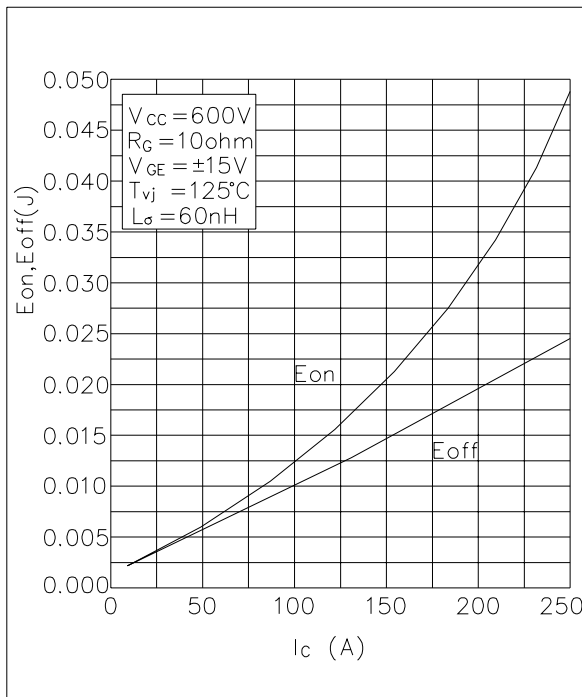


Fig.3 Typical switching characteristics vs collector current

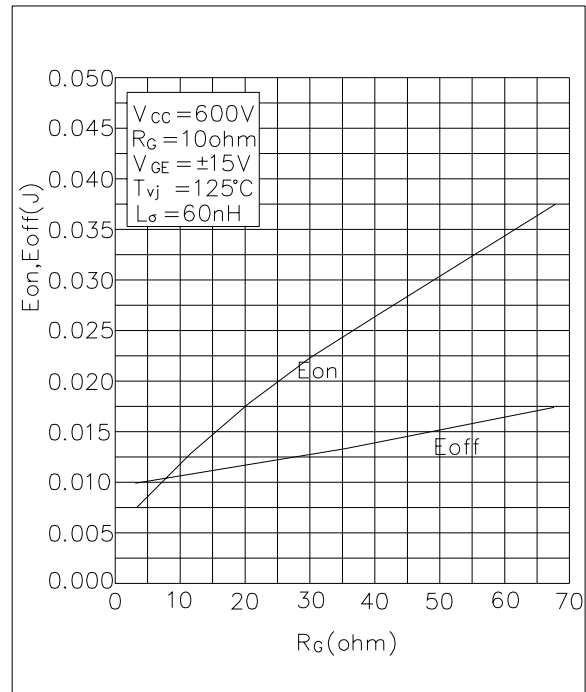


Fig.4 Typical switching characteristics vs gate resistor

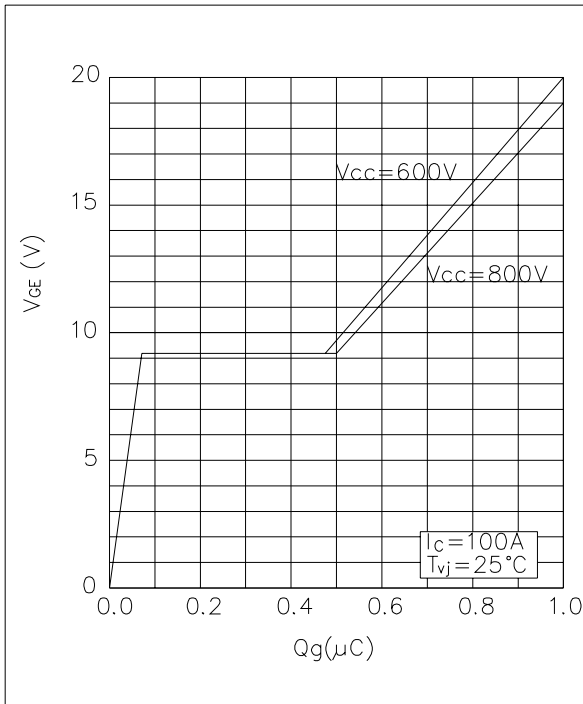


Fig.5 Typical gate charge characteristics

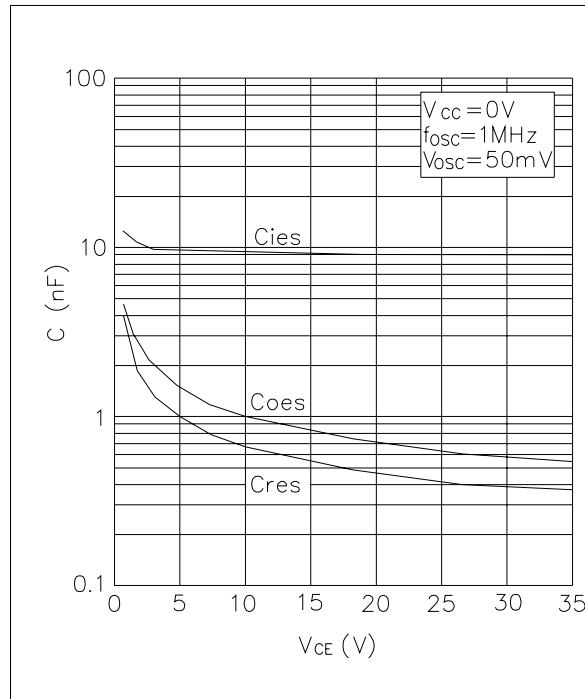


Fig.6 Typical capacitances vs collector-emitter voltage

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