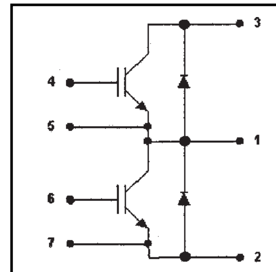
XI'AN IR-PERI

Company **PRELIMINARY** GA200TF60K

" HALF-BRODGE" IGBT DOUBLE INT-A -PAK

Features

- GEN5 NPT Technology
- Low Vce(on)
- 10us Short Circuit Capability
- Square RBSOA
- Positive Vce(on) Temperature Coefficient
- HEXFRED™ antiparallel diodes with ultra- soft recovery
- Industry standard package



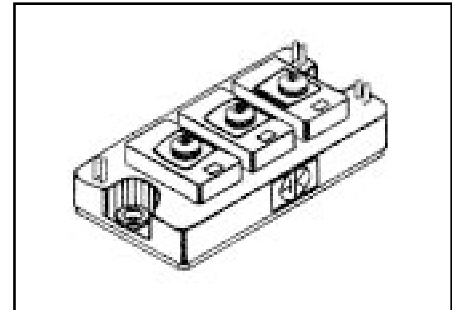
V_{CES}=600V

$V_{CE(on)\ typ.}$=1.70V

@V_{GE}=15V,I_C=150A

Benefits

- Increased operating efficiency
- Rugged Transient Performance
- Performance optimized for power conversion: UPS, SMPS, Welding;Benchmark Efficiency for Motor Control Applications
- Excellent Current Sharing in Parallel Operation
- Lower EMI, requires less snubbing



Absolute Maximum Ratings

	Parameter	Max.	Units
V_{CES}	Collector- to- Emitter Voltage	600	V
I_C @ Tc=25ºC	Continuous Collector Current	200	
I_C @ Tc=85ºC	Continuous Collector Current	200	
I_{CM}	Pulsed collector Current	400	A
I_{LM}	Peak switching Current	400	
I_{FM}	Peak Diode Forward Current	400	
V_{GE}	Gate- to- Emitter Voltage	± 20	V
V_{ISOL}	RMS Isolation Voltage, Any Terminal To Case, t =1 min	2500	
P_D @ T_C=25ºC	Maximum Power Dissipation	625	W
P_D @ T_C=85ºC	Maximum Power Dissipation	325	
T_J	Operating Junction Temperature Range	-40 to +150	ºC
T_{STG}	Storage Temperature Range	-40 to +125	

Termal / Mechanical Characteristics

	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Termal Resistance, Junction-to- Case- IGBT	-	0.20	ºC/W
$R_{\theta JC}$	Termal Resistance, Junction-to- Case- Diode	-	0.35	
$R_{\theta CS}$	Termal Resistance, Csar-to- Sink- Module	0.1		-
	Mouting Torque, Case-to-Heatsink	-	4.0	N.m
	Mouting Torque, Case-to-Terminal 1,2 & 3	-	3.0	
	Weight of Module	300	-	g

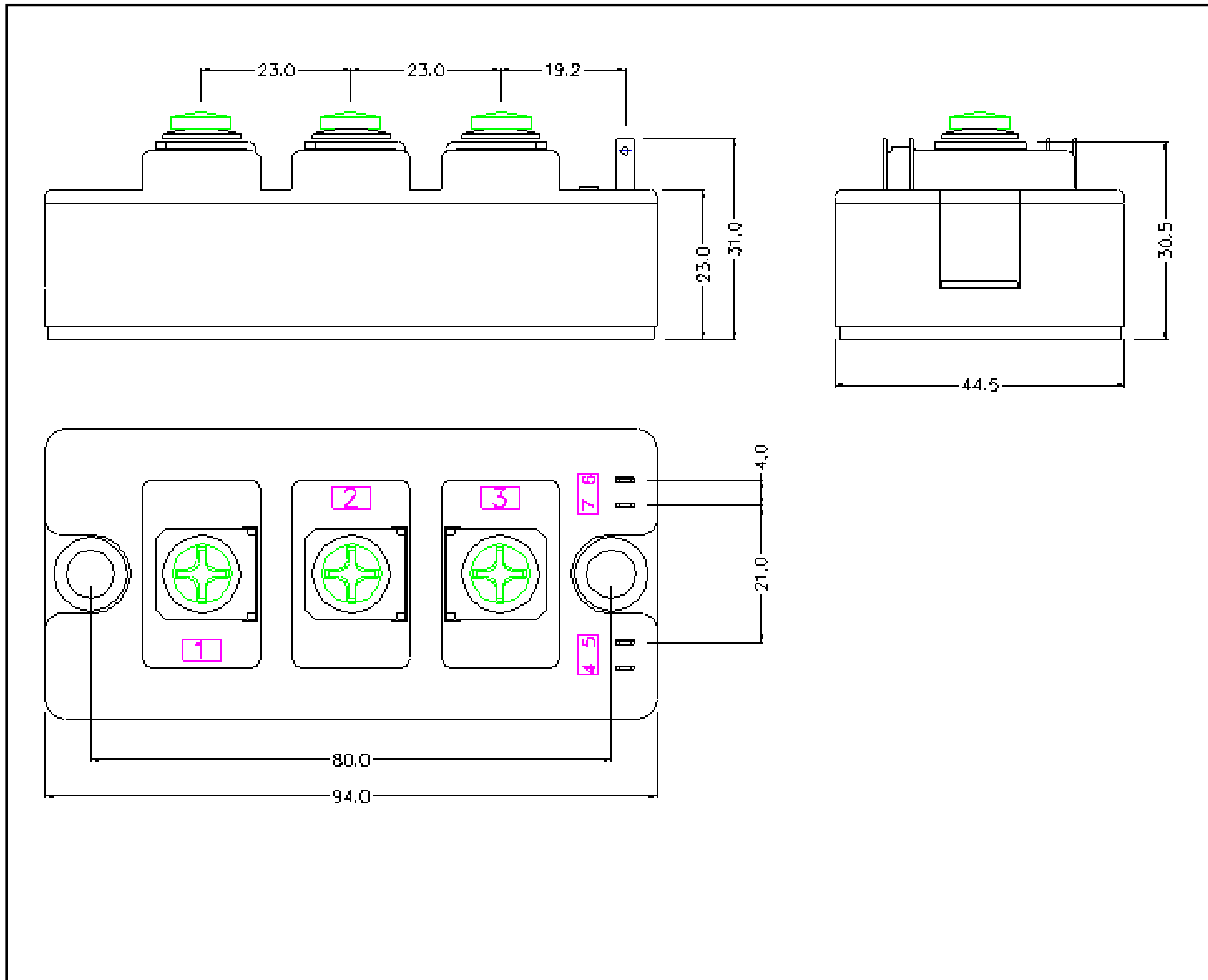
Electrical Characteristics @ T_J=25°C(unless otherwise specified)

	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)CES}$	Collector-to-Emitter Breakdown Voltage	600	—	—	V	V_{GE}=0V, I_C=1mA
$V_{CE(ON)}$	Collector-to-Emitter Voltage	—	1.8	—		V_{GE}=15V, I_C=200A
		—	1.8	—		V_{GE}=15V, I_C=200A, T_J=125°C
$V_{GE(th)}$	Gate Threshold Voltage	4.0	—	6.0		I_C=1.0mA
$DV_{GE(th)}DT_J$	Temperature Coeff. of Threshold Voltage	—		—	mV/°C	V_{CE}=V_{GE}, I_C=0.75mA
g_{fe}	Forward Ttansconductance	—	187	—	S	V_{CE}=V_{GE}, I_C=200A
I_{CES}	Collector - to - Emitter Leaking Current	—	—	1.0	mA	V_{GE}=0V, V_{CE}=600V
		—	—	2.0		V_{GE}=0V, V_{CE}=600V, T_J=125°C
V_{FM}	Diode Forward Voltage - Maximum	—	1.4	2.0	V	I_F=200A , V_{GE}=0V
		—	1.4	—		I_F=200A , V_{GE}=0V , T_J=125°C
I_{GES}	Gate - to - Emitter Leakage Current	—	—	250	nA	V_{GE}=± 20V

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

	Parameter	Min.	Typ.	Max.	Units	Conditions
Q_g	Total gate charge (turn - on)	—	820	930	nC	V_{CC}= 400V V_{GE}=15V
Q_{ge}	Gate - Emitter charge (turn - on)	—	162	256		I_C=200A
Q_{gc}	Gate - Collector charge (turn - on)	—	380	640		T_J=25°C
$T_{d(on)}$	Turn - On Delay Time	—	—	160	nS	R_{G1}=10Ω , R_{G2} = 0Ω
t_r	Rise Time	—	—	145		I_C = 200A
$T_{d(off)}$	Turn - Off Delay Time	—	—	336		V_{CC}= 360V
t_f	Fall Time	—	—	287		V_{GE}=± 15V
E_{on}	Turn - On Switching Energy	—	12	—	mJ	
$E_{off(1)}$	Turn - Off Switching Energy	—	20	—		
$E_{ts(1)}$	Total Switching Energy	—	32	33		
C_{ies}	Input Capacitance	—	—	29000	pF	V_{GE} = 0V
C_{oes}	Output Capacitance	—	—	2100		V_{CC} = 30V
C_{res}	Reverse Transfer Capacitance	—	—	1100		f=1MHZ
t_{rr}	Diode Reverse Recovery Time	—	—	140	nS	I_C = 200A
I_{rr}	Diode Peak Reverse Current	—	—	100	A	R_{G1}=27Ω
Q_{rr}	Diode Recovery Charge	—	4000	—	nC	R_{G2}=0Ω
di(rec)M/dt	Diode Peak Rate of Fall of Recovery During t_b	—	4680	—	A/µs	V_{CC}=360V di/dt=1400A/µs

Case Outline



Dimensions are shown in millimeters

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