XI'AN IR-PERI

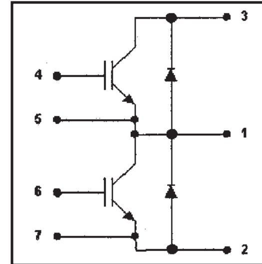
PRELIMINARY

GA100TS60K

"HALF-BRIDGE" IGBT 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



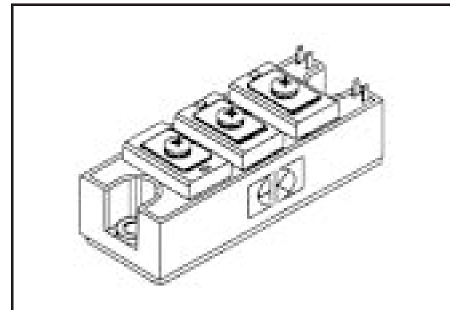
V_{CES} = 600V

$V_{CE(on)\ typ.}$ = 1.9V

@V_{GE} = 15V, I_C = 100A

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 @ T_C = 70°C	Continuous Collector Current	100	A
I_{CM}	Pulsed Collector Current•	200	
I_{LM}	Peak Switching Current,	200	
I_{FM}	Peak Diode Forward Current	200	
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 = 25°C	Maximum Power Dissipation	417	W
P_D @ T_C = 85°C	Maximum Power Dissipation	220	
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	—	0.30	°C/W
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case - Diode	—	0.70	
$R_{\theta CS}$	Thermal Resistance, Case-to-Sink - Module	0.1	—	
	Mounting Torque, Case-to-Heatsink	—	4.0	N·m
	Mounting Torque, Case-to-Terminal 1, 2 & 3③	—	3.0	
	Weight of Module	200	—	g

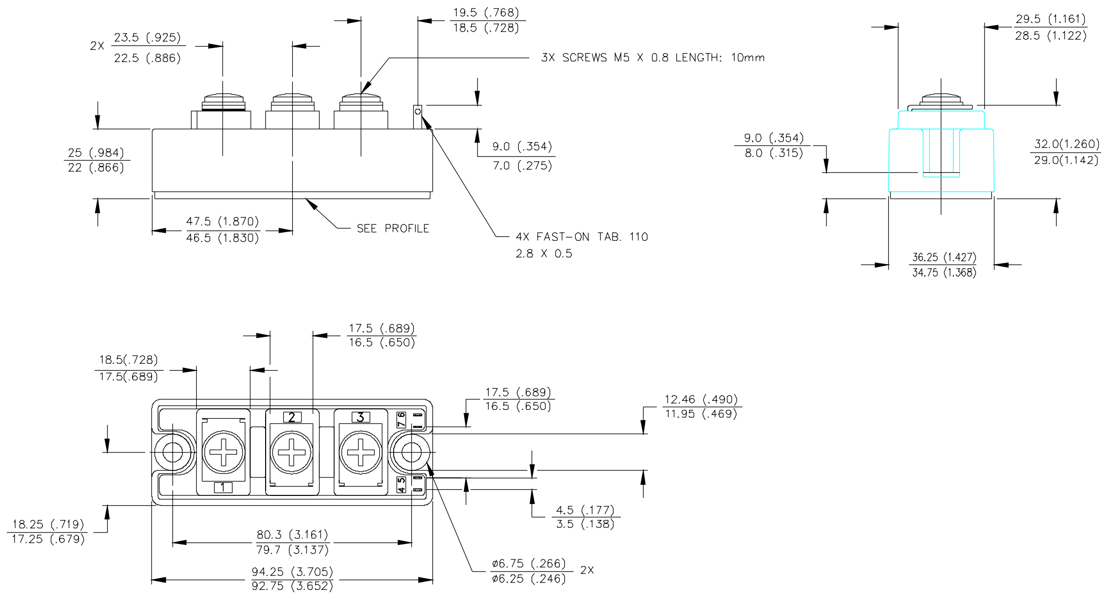
Electrical Characteristics @ T_J = 25°C (unless otherwise specified)

	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	—	1.9	2.1		V_{GE} = 15V, I_C = 100A
		—	2.15	—		V_{GE} = 15V, I_C = 100A, T_J = 125°C
$V_{GE(th)}$	Gate Threshold Voltage	4.5	5.1	5.5		I_C = 250uA
I_{CES}	Collector-to-Emitter Leaking Current		—	100	uA	V_{GE} = 0V, V_{CE} = 600V
		—	—	100		V_{GE} = 0V, V_{CE} = 600V, T_J = 125°C
V_{FM}	Diode Forward Voltage - Maximum	—	1.5	—	V	I_F = 100A, V_{GE} = 0V
		—	1.4	—		I_F = 100A, V_{GE} = 0V, T_J = 125°C
I_{GES}	Gate-to-Emitter Leakage Current		—	1.1	uA	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)	—	443	664	nC	V_{CC} = 400V
Q_{ge}	Gate - Emitter Charge (turn-on)	—	86	129		I_C = 66A
Q_{gc}	Gate - Collector Charge (turn-on)	—	150	225		T_J = 25°C
$t_{d(on)}$	Turn-On Delay Time	—	35	—	ns	R_{G1} = 3.3Ω, R_{G2} = 0Ω
t_r	Rise Time	—	12	—		I_C = 100A
$t_{d(off)}$	Turn-Off Delay Time	—	135	—		V_{CC} = 360V
t_f	Fall Time	—	30	—		V_{GE} = ±15V
E_{on}	Turn-On Switching Energy	—	1.0	—	mJ	
$E_{off\ (1)}$	Turn-Off Switching Energy	—	3.3	—		
$E_{ts\ (1)}$	Total Switching Energy	—	4.3	9		
C_{ies}	Input Capacitance	—	9837	—	pF	V_{GE} = 0V
C_{oes}	Output Capacitance	—	615	—		V_{CC} = 30V
C_{res}	Reverse Transfer Capacitance	—	128	—		f = 1 MHz
t_{rr}	Diode Reverse Recovery Time	—	143	—	ns	I_C = 100A
I_{rr}	Diode Peak ReverseCurrent	—	95	—	A	R_{G1} = 27Ω
Q_{rr}	Diode Recovery Charge	—	6813	—	nC	R_{G2} = 0Ω
$di_{(rec)}M/_{dt}$	Diode Peak Rate of Fall of Recovery During t_b	—	1883	—	A/μs	V_{CC} = 360V di/dt»1300A/μs

Case Outline — INT-A-PAK



Dimensions are shown in millimeters (inches)