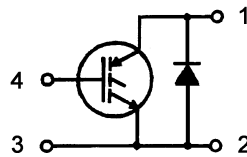


GA600DD60K

“ SINGLE SWITCH ” IGBT DOUBLE INT-A -PAK

Features

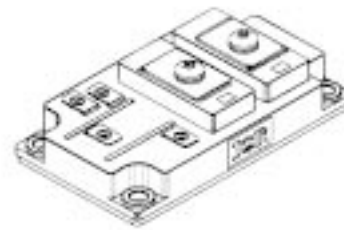
- GEN5 Non Punch Through (NPT) Technology
- Low $V_{CE(on)}$
- 10 μ s Short Circuit Capability
- Square RBSOA
- Positive $V_{CE(on)}$ Temperature Coefficient
- Industry standard package
- UL recognition pending



$V_{CES}=600V$
 $V_{CE(on)}$ typ.=1.5V @ 25°C
 @ $V_{GE}=15V, I_c=600A$

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	600	V
I_c @ $T_c=25^\circ C$	Continuous Collector Current	700	A
I_c @ $T_c=85^\circ C$	Continuous Collector Current	600	
I_{CM}	Pulsed collector Current	1200	
I_{LM}	Peak switching Current	1200	
I_{FM}	Peak Diode Forward Current	1200	
V_{GE}	Gate- to- Emitter Voltage	± 20	V
V_{ISOL}	RMS Isolation Voltage, Any Terminal To Case, t=1 min	2500	
P_D @ $T_c=25^\circ C$	Maximum Power Dissipation	1560	W
P_D @ $T_c=85^\circ C$	Maximum Power Dissipation	810	
T_J	Operating Junction Temperature Range	-40 to +150	$^\circ C$
T_{STG}	Storage Temperature Range	-40 to +125	

Thermal / Mechanical Characteristics

	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to- Case- IGBT	-	0.08	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance, Junction-to- Case- Diode	-	0.20	
$R_{\theta CS}$	Thermal Resistance, Case-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	400	-	g

GA600DD60K

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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 =2mA
V _{CE(ON)}	Collector-to-Emitter Voltage	—	1.5	1.8		V _{GE} =15V, I _c =600A
		—	1.75	—		V _{GE} =15V, I _c =600A, T _J =125°C
V _{GE(th)}	Gate Threshold Voltage	5.0	—	6.8		I _c =4mA, V _{CE} =10.0V
g _{fe}	Forward Transconductance	—	697	—	S	V _{CE} =25V, I _c =600A
I _{CES}	Collector - to - Emitter Leaking Current	—	—	2.0	mA	V _{GE} =0V, V _{CE} =600V
		—	—	20		V _{GE} =0V, V _{CE} =600V, T _J =125°C
V _{FM}	Diode Forward Voltage - Maximum	—	1.7	2.2	V	I _F =600A, V _{GE} =0V
		—	1.6	—		I _F =600A, V _{GE} =0V, T _J =125°C
I _{GES}	Gate - to - Emitter Leakage Current	—	—	1000	nA	V _{GE} =± 20V

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

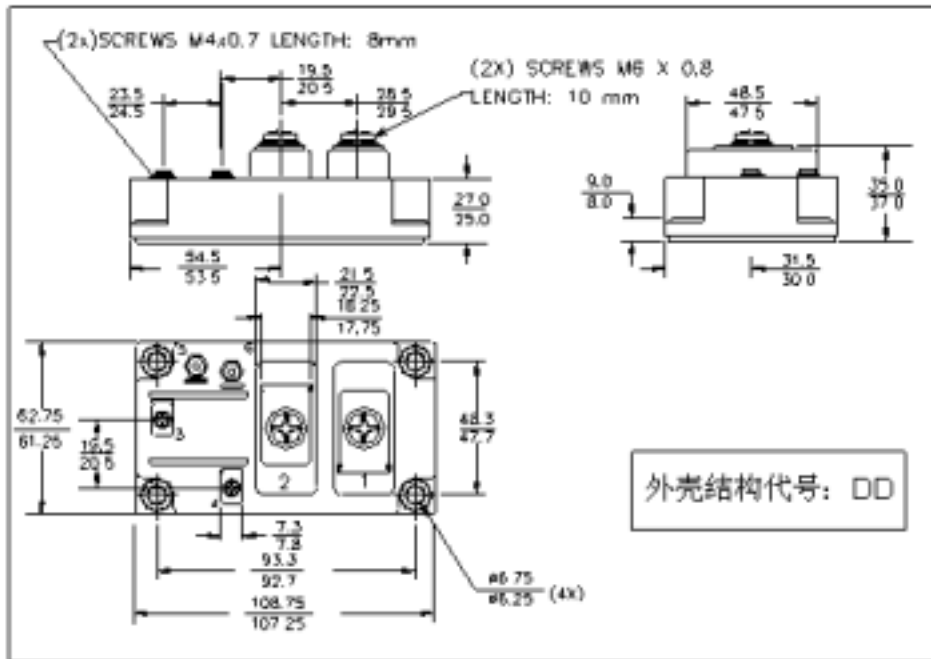
	Parameter	Min.	Typ.	Max.	Units	Conditions
Q _g	Total gate charge (turn - on)	—	3786	5907	nC	V _{CC} = 300V V _{GE} =15V
Q _{ge}	Gate - Emitter charge (turn - on)	—	623	956		I _c =600A
Q _{gc}	Gate - Collector charge (turn - on)	—	1385	2100		T _J =25°C
T _{d(on)}	Turn - On Delay Time	—	1189	—	nS	R _{G1} =15Ω , R _{G2} = 0Ω
t _r	Rise Time	—	980	—		I _c = 600A
T _{d(off)}	Turn - Off Delay Time	—	983	—		V _{CC} = 300V
t _f	Fall Time	—	320	—		V _{GE} =± 15V
E _{on}	Turn - On Switching Energy	—	19	—	mJ	
E _{off(1)}	Turn - Off Switching Energy	—	110	—		
E _{ts(1)}	Total Switching Energy	—	129	298		
C _{ies}	Input Capacitance	—	68009	—	pF	V _{GE} = 0V
C _{oes}	Output Capacitance	—	9890	—		V _{CC} = 30V
C _{res}	Reverse Transfer Capacitance	—	2081	—		f = 1MHZ
t _{rr}	Diode Reverse Recovery Time	—	150	—	nS	I _c = 600A
I _{rr}	Diode Peak Reverse Current	—	180	—	A	R _{G1} =15Ω
Q _{rr}	Diode Recovery Charge	—	10819	—	nC	R _{G2} =0Ω
di(rec)M/dt	Diode Peak Rate of Fall of Recovery During t _b	—	590	—	A/μs	V _{CC} =300V di/dt=800A/μs

Notes:

The thermistor has an average rate of 7w/°C between 20°C and 125°C.
Consult U.S. Sensor data sheet for P821GS1K for details

Case Outline

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Dimensions are shown in millimeters