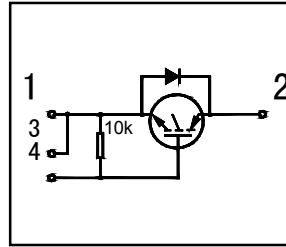


“ SINGLE SWITCH ” IGBT DOUBLE INT-A -PAK

**Features**

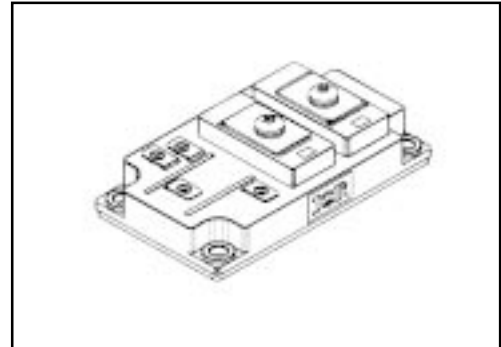
- GEN5 Non Punch Through (NPT) Technology
- Low  $V_{CE(on)}$
- 10  $\mu$ S Short Circuit Capability
- Square RBSOA
- Positive  $V_{CE(on)}$  Temperature Coefficient
- Industry standard package
- UL recognition pending



$V_{CES}=600V$   
 $V_{CE(on)}$  typ.=1.9V  
 @ 25°C  
 @ $V_{GE}=15V, I_c=600A$

**Benefits**

- Increased operating efficiency
- Direct mounting to heatsink
- Performance optimized for power conversion: UPS, SMPS, Welding, Mortor Control
- Lower EMI, requiries 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	$\pm 20$	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	°C
$T_{STG}$	Storage Temperature Range	-40 to +125	

**Termal / Mechanical Characteristics**

	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Termal Resistance, Junction-to- Case- IGBT	-	0.08	°C/W
$R_{\theta JC}$	Termal Resistance, Junction-to- Case- Diode	-	0.20	
$R_{\theta CS}$	Termal Resistance, Csar-to- Sink- Module	0.1	-	N.m
	Mouting Torque, Case-to-Heatsink	-	4.0	
	Mouting Torque, Case-to-Terminal 1,2 & 3	-	3.0	
	Weight of Module	400	-	g

**Electrical Characteristics @ T<sub>J</sub>=25°C(unless otherwise specified)**

	Parameter	Min.	Typ.	Max.	Units	Conditions
V <sub>(BR)CES</sub>	Collector-to-Emitter Breakdown Voltage	600	—	—	V	V <sub>GE</sub> =0V, I <sub>C</sub> =2mA
V <sub>CE(ON)</sub>	Collector-to-Emitter Voltage	—	1.9	2.2		V <sub>GE</sub> =15V, I <sub>C</sub> =600A
		—	2.0	—		V <sub>GE</sub> =15V, I <sub>C</sub> =600A, T <sub>J</sub> =125°C
V <sub>GE(th)</sub>	Gate Threshold Voltage	3.5	—	5.5		I <sub>C</sub> =5mA, V <sub>CE</sub> =6.0V
g <sub>fe</sub>	Forward Transconductance	—	697	—	S	V <sub>CE</sub> =25V, I <sub>C</sub> =600A
I <sub>CES</sub>	Collector - to - Emitter Leaking Current	—	—	2.0	mA	V <sub>GE</sub> =0V, V <sub>CE</sub> =600V
		—	—	20		V <sub>GE</sub> =0V, V <sub>CE</sub> =600V, T <sub>J</sub> =125°C
V <sub>FM</sub>	Diode Forward Voltage - Maximum	—	1.8	1.9	V	I <sub>F</sub> =600A, V <sub>GE</sub> =0V
		—	1.7	—		I <sub>F</sub> =600A, V <sub>GE</sub> =0V, T <sub>J</sub> =125°C
I <sub>GES</sub>	Gate - to - Emitter Leakage Current	—	—	1000	nA	V <sub>GE</sub> =± 20V

**Dynamic Characteristics - T<sub>J</sub>=125°C (unless otherwise specified)**

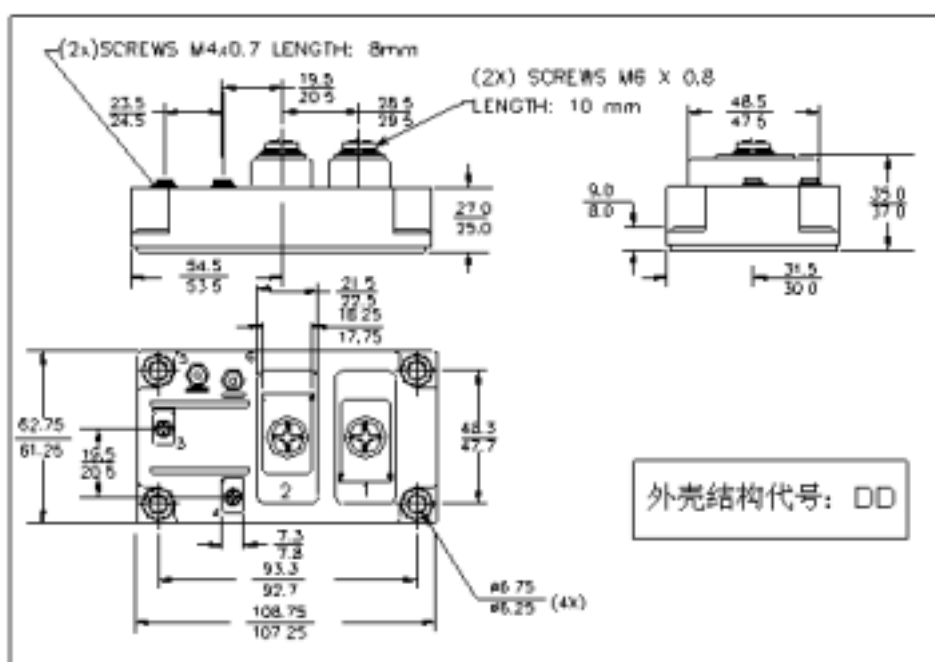
	Parameter	Min.	Typ.	Max.	Units	Conditions
Q <sub>g</sub>	Total gate charge ( turn - on )	—	3786	5907	nC	V <sub>CC</sub> = 300V V <sub>GE</sub> =15V
Q <sub>ge</sub>	Gate - Emitter charge ( turn - on )	—	623	956		I <sub>C</sub> =600A
Q <sub>gc</sub>	Gate - Collector charge ( turn - on )	—	1385	2100		T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

## Notes:

The thermistor has an average rate of 7mW/°C between 20°C and 125°C.

Consult U.S. Sensor data sheet for P821GS1K for details

## Case Outline



Dimensions are shown in millimeters

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