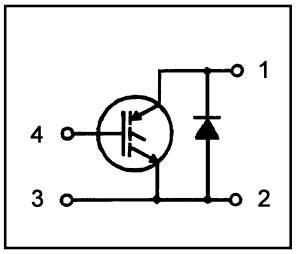
XI'AN IR-PERI Company

Target Data

GA400DD120ST

"SINGLE SWITCH" IGBT DOUBLE INT-A -PAK

Features

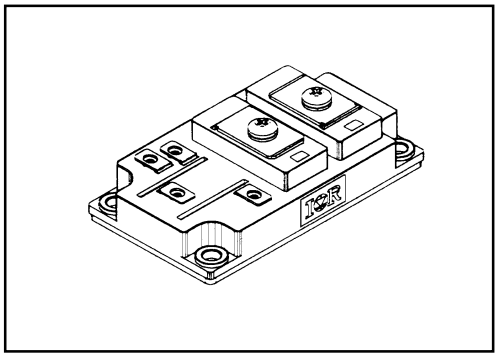


V_{CES}=1200V

$V_{CE(on)\ typ.}$=2.5V

@V_{GE}=15V,I_C=400A

- Low loss, rugged IGBT SPT + technology
- Optimized high operating frequencies 8-20 kHz in hard switching,
- Very low conduction and switching losses
- Smooth switching for good EMC
- Industry standard package
- Short circuit rated 10μs



Benefits

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

Absolute Maximum Ratings

	Parameter	Max.	Units
V_{CES}	Collector- to- Emitter Voltage	1200	V
I_C @ Tc=25°C	Continuous Collector Current	550	A
I_C @ Tc=85°C	Continuous Collector Current	400	
I_{CM}	Pulsed collector Current	800	
I_{LM}	Peak switching Current	800	
I_{FM}	Peak Diode Forward Current	800	
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	2700	W
P_D @ T_C =85°C	Maximum Power Dissipation	1400	
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- IBGT	-	0.045	°C/W
$R_{\theta JC}$	Termal Resistance, Junction-to- Case- Diode	-	0.09	
$R_{\theta CS}$	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	400	-	g

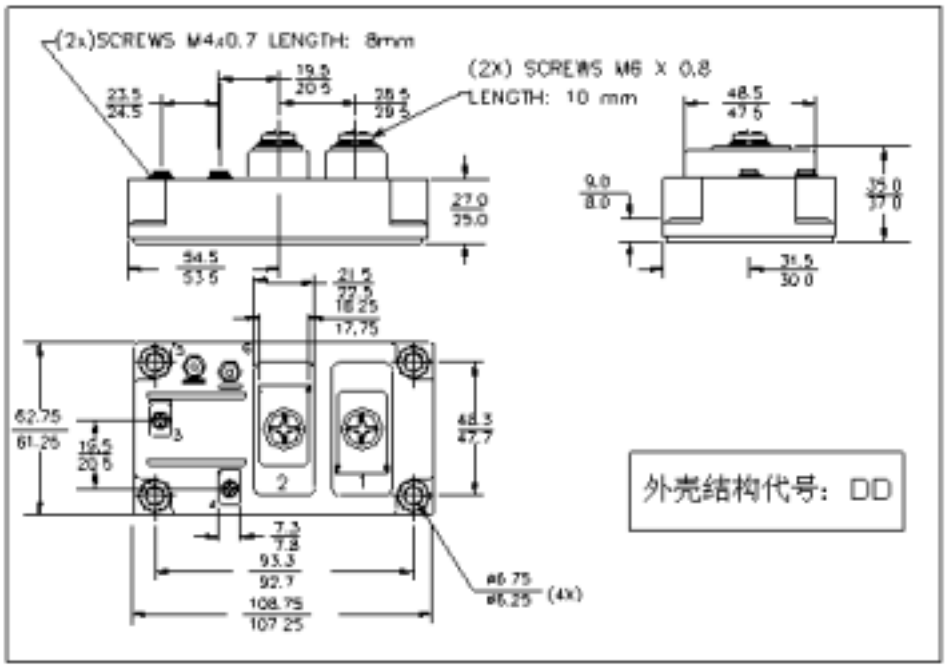
Electrical Characteristics @ T_J=25°C(unless otherwise specified)

	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=400A
		—	2.7	—		V_{GE}=15V, I_C=400A,T_J=125°C
$V_{GE(th)}$	Gate Threshold Voltage	4.5	6.2	7.0		I_C=5mA
$DV_{GE(th)}DT_J$	Temperature Coeff. of Threshold Voltage	—	—	—	mV/°C	V_{CE}=V_{GE}, I_C=5mA
g_{fe}	Forward Ttansconductance	—	678	—	S	V_{CE}=25V, I_C=400A
I_{CES}	Collector - to - Emitter Leaking Current	—	—	1.0	mA	V_{GE}=0V, V_{CE}=1200V
		—	—	3		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=400A , V_{GE}=0V
		—	1.9	—		I_F=400A , 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)	—	4200	—	nCl	V_{CC}= 400V V_{GE}=15V
Q_{ge}	Gate - Emitter charge (turn - on)	—	640	—		$_C$=498A
Q_{gc}	Gate - Collector charge (turn - on)	—	1320	—		T_J =25°C
$T_{d(on)}$	Turn - On Delay Time	—	135	—	nS	R_G =3.3Ω
t_r	Rise Time	—	65	—		I_C = 400A
$T_{d(off)}$	Turn - Off Delay Time	—	490	—		V_{CC}= 600V
t_f	Fall Time	—	90	—		V_{GE}=±15V
E_{on}	Turn - On Switching Energy	—	48	—	mJ	Lσ=60nH
$E_{off(1)}$	Total Switching Energy	—	44	—		inductive load
$E_{ts(1)}$	Turn - On Switching Energy	—	92	__		
C_{ies}	Input Capacitance	—	16	—	nF	V_{GE} = 0V
C_{oes}	Output Capacitance	—	2.6	—		V_{CC} = 30V
C_{res}	Reverse Transfer Capacitance	—	1.68	—		*f* =1MHZ
t_{rr}	Diode Reverse Recovery Time	—	400	—	nS	I_C = 400A
I_{rr}	Diode Peak Reverse Current	—	160	—	A	L σ=50nH
Q_{rr}	Diode Recovery Charge	—	54	—	uC	V_{CC}=600V,di/dt=1600A/μs
di(rec)M/dt	Diode Peak Rate of Fall of Recovery During t_b	—	2489	—	A/μs	Inductive Load
T_{sc}	Short circuit withstand time	10	—	—	μs	V_{CC}=720V, V_{GE}=±15V Min. R_{G1}=15Ω, V_{CEP}=1100V

Case Outline



Dimensions are shown in millimeters

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