DACO SEMICONDUCTOR CO., LTD.

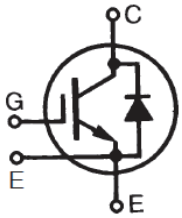
DAZF100G120SCA

High-frequency switch
IGBT Module 1200V / 100A

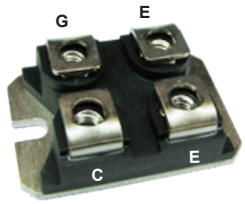
Preliminary

Features

- Fast Switching Trench / Field Stop IGBT Technology
- Low Switching Losses
- Super Fast Diodes
- High Short Circuit Capability



SOT-227



G = Gate, C = Collector, E = Emitter

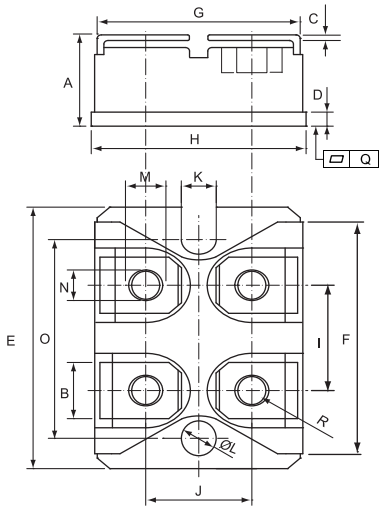
Applications

- Welder / Power Supply
- UPS / Inverter
- Industrial Motor Drive

Maximum Ratings (T_C = 25℃)

Item		Symbol	Rated Value	Unit
Collector-Emitter Voltage		V_{CES}	1200	V
Gate-Emitter Voltage		V_{GES}	±20	V
DC-Collector Current	T_C = 80℃	$I_{C,nom.}$	100	A
Repetitive Peak Collector Current	tp =1ms	I_{CRM}	200	A
Total Power Dissipation		P_{tot}	625	W
Isolation Voltage (A.C. 1 minute) between All Terminals and Baseplate		V_{iso}	2500	V
DC Forward Current		I_F	100	A
Repetitive Peak Forward Current	tp =1ms	I_{FRM}	200	A
Junction Temperature Range		T_J	−40～+150	℃
Storage Temperature Range		T_{stg}	−40～+125	℃
Mounting Torque (M4 screw)	To heatsink To terminals	M_d	1.3 1.1	N.m
Weight			31	g

Dimensions in inches and (millimeters)



DIMENSIONS				
	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.460	0.483	11.68	12.28
B	0.307	0.323	7.80	8.20
C	0.030	0.033	0.75	0.85
D	0.071	0.081	1.80	2.05
E	1.488	1.504	37.80	38.20
F	1.248	1.260	31.70	32.00
G	0.917	0.957	23.30	24.30
H	0.996	1.008	25.30	25.60
I	0.579	0.602	14.70	15.30
J	0.492	0.516	12.50	13.10
K	0.161	0.169	4.10	4.30
L	0.161	0.169	4.10	4.30
M	0.181	0.197	4.60	5.00
N	0.165	0.181	4.20	4.60
O	1.181	1.197	30.00	30.40
Q	-0.002	0.004	-0.05	0.10
R	M4*8			

■ Electrical Characteristics (T_C = 25℃)

Characteristic		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector-Emitter Cut-Off Current		I_{CES}	V_{CE}=1200V V_{GE}=0V	-	10	500	μA
Gate-Emitter Leakage Current		I_{GES}	V_{GE}=20V V_{CE}=0V	-	-	400	nA
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	I_C=100A ,V_{GE}=15V	-	1.90	2.15	V
Gate-Emitter Threshold Voltage		$V_{GE(th)}$	V_{CE}=V_{GE}, I_C=4mA	4.5	5.5	6.5	V
Input Capacitance		C_{ies}	V_{CE}=25V, V_{GE}=0V, f=1MHz	-	15	-	nF
Output Capacitance		C_{oes}	V_{CE}=25V, V_{GE}=0V, f=1MHz	-	0.40	-	nF
Reverse Transfer Capacitance		C_{res}	V_{CE}=25V, V_{GE}=0V, f=1MHz	-	0.20	-	nF
Switching Time	Rise Time	t_r	V_{CC}=600V I_C=100A R_G=1Ω V_{GE}=±15V	-	0.04	-	μs
	Turn-On Time	$t_{d,on}$		-	0.16	-	
	Fall Time	t_f		-	0.08	-	
	Turn-Off Time	$t_{d,off}$		-	0.30	-	
Turn-on Energy Loss Per Pulse		E_{on}	I_C=100A , V_{CC}=600V V_{GE}=15V , R_G=1Ω Inductive load	-	1.5	-	mJ
Turn-off Energy Loss Per Pulse		E_{off}		-	6.2	-	mJ
External Gate Resistance		R_G	Per Switch	1	-	10	Ω

■ Free Wheeling Diode Ratings & Characteristics (T_C = 25℃)

Characteristic	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Peak Forward Voltage	V_F	I_F=100A, V_{GE}=0V	-	1.8	2.3	V
Peak Reverse Recovery Current	I_{RM}	I_F=100A, R_G=1Ω V_R= 600V, V_{GE}= -15V	-	90	-	A
Recovered Charge	Q_r	I_F=100A, R_G=1Ω V_R= 600V, V_{GE}= -15V	-	9.9	-	μc
Reverse Recovery Energy	E_{rec}	I_F=100A, R_G=1Ω V_R= 600V, V_{GE}= -15V	-	6.25	-	mJ
Reverse Recovery Time	T_{rr}	I_F= 100A, R_G=1Ω V_R= 600V, V_{GE}= -15V	-	142	-	ns

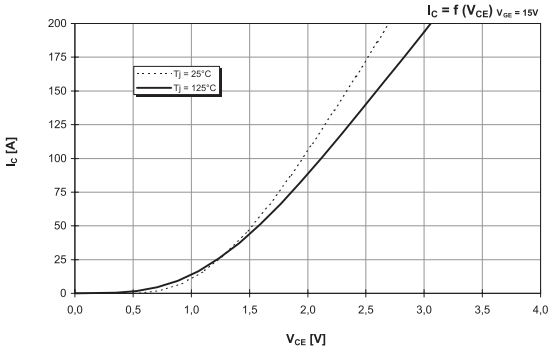
■ Thermal Characteristics (T_C = 25℃)

Characteristic		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Thermal Impedance	IGBT	$R_{th(j-c)}$	Junction to Case	-	-	0.20	℃/W
	Diode			-	-	0.48	

Typical Characteristics

Preliminary Data

Fig.1 Output characteristic (Typical)



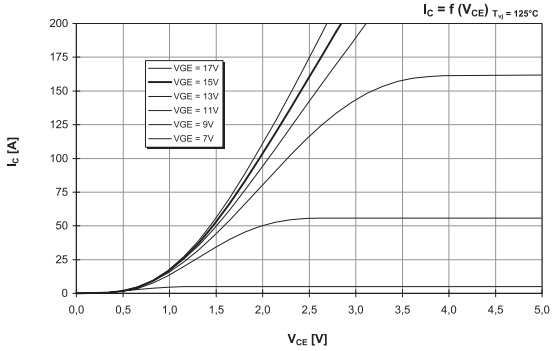


Fig.2 Transfer characteristic (Typical)

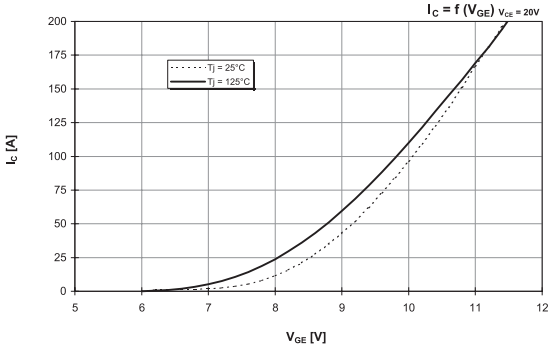


Fig.3 Forward characteristic of inverse diode (typical)

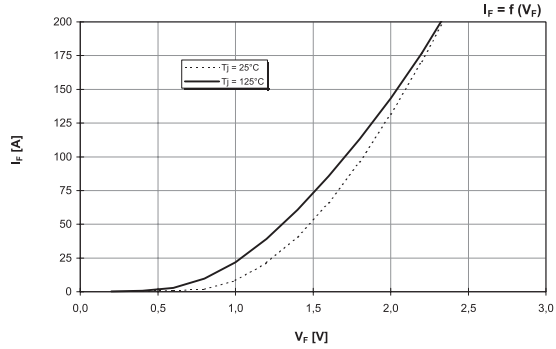


Fig.4 Switching losses (Typical)

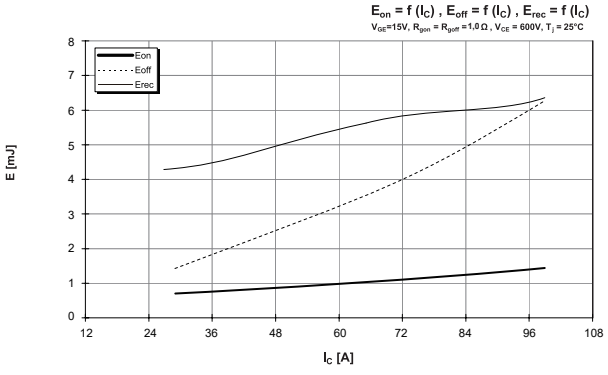


Fig.5 Switching losses IGBT,Inverter (typical)

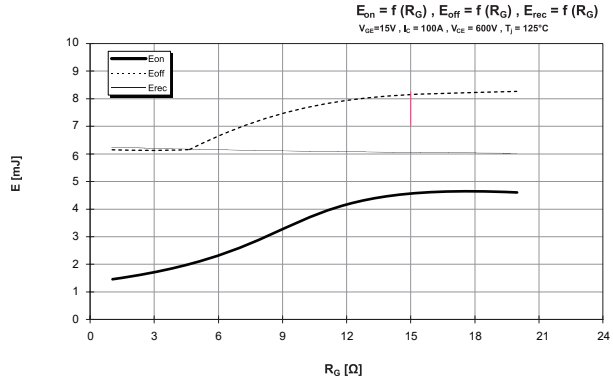
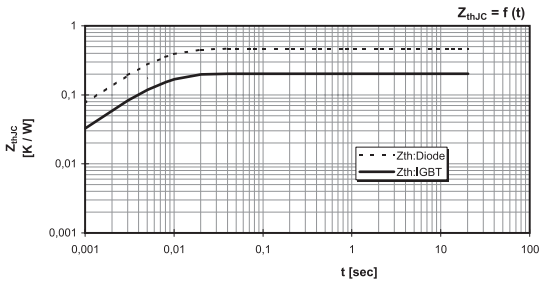
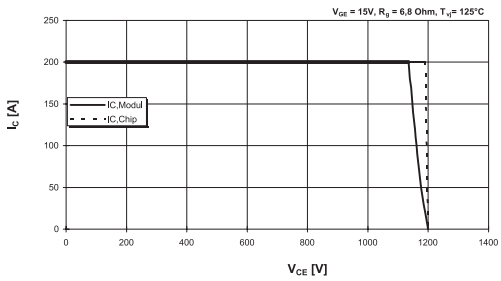


Fig.6 Transient thermal impedance



i	1	2	3	4
r_i [K/kW] : IGBT	71,26	54,24	34,43	0,06
τ_i [sec] : IGBT	0,006	0,029	0,043	1,014
r_i [K/kW] : Diode	81,89	122,02	63,19	32,9
τ_i [sec] : Diode	0,006	0,035	0,033	0,997

Fig.7 Reverse bias safe operation area (RBSOA)



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