DACO SEMICONDUCTOR CO., LTD.

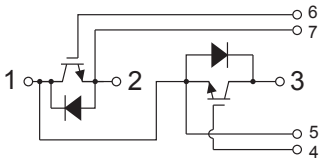
DAGNH75600

IGBT Module 75A

Preliminary

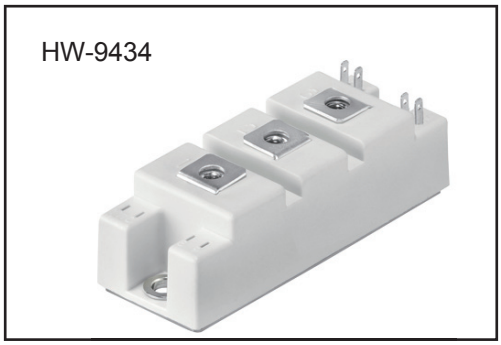
Features

- Fast switching IGBT trench technology
- Low switching loss
- Superfast diodes
- High short circuit capability



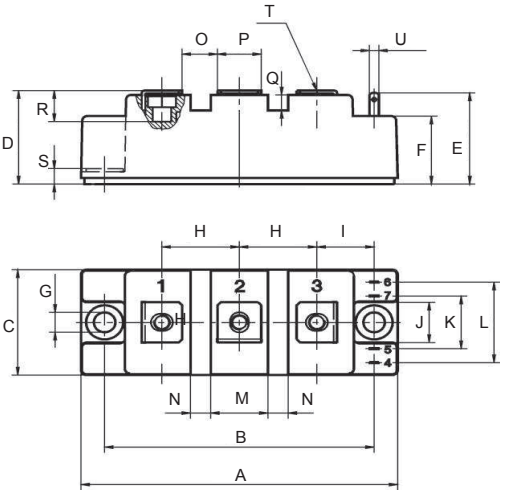
Applications

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



Maximum Ratings (T_C= 25℃)

Item		Symbol	Rated Value	Unit
Collector-Emitter Voltage		V_{CES}	600	V
Gate-Emitter Voltage		V_{GES}	±20	V
DC-Collector Current	T_C = 70℃	$I_{C,nom.}$	75	A
Repetitive Peak Collector Current	tp =1ms	I_{CRM}	150	A
Total Power Dissipation		P_{tot}	315	W
Isolation Voltag (e Terminal to Base, AC 1 min.)		V_{iso}	2500	V
DC Forward Current		I_F	75	A
Repetitive Peak Forward. Current	tp =1ms	I_{FRM}	150	A
Junction Temperature Range		T_J	−40～+150	℃
Storage Temperature Range		T_{stg}	−40～+125	℃
Mounting Torque	Module Base to Heatsink		5	N.m
	Busbar to Terminal		5	



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MXA	MIN	MXA	
A	···	3.700	···	94.0	
B	3.134	3.165	79.6	80.4	
C	···	1.339	···	34.0	
D	···	1.201	···	30.5	
E	···	1.181	···	30.0	
F	···	.866	···	22.0	
G	···	.252	···	6.4	Ø
H	.894	.917	22.7	23.3	
I	···	.670	···	17.0	
J	···	.512	···	13.0	
K	···	.677	···	17.2	
L	···	1.024	···	26.0	
M	···	.699	···	17.0	
N	···	.236	···	6.0	
O	···	.413	···	10.5	
P	···	.512	···	13.0	
Q	···	.217	···	5.5	
R	···	.512	···	13.0	
S	···	.197	···	5.0	
T	M5				
U	···	110*20	···	2.8*0.5	

■ Electrical Characteristics (T_{VJ} = 25℃)

Characteristic		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector-Emitter Cut-Off Current		I_{CES}	V_{CE}=600V V_{GE}=0V	-	1	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=75A ,V_{GE}=15V	-	1.95	2.45	V
Gate-Emitter Threshold Voltage		$V_{GE(th)}$	V_{CE}=V_{GE}, I_C=1.5mA	4.5	5.5	6.5	V
Input Capacitance		C_{ies}	V_{CE}=25V, V_{GE}=0V, f=1MHz	-	6.0	-	nF
Output Capacitance		C_{oes}	V_{CE}=25V, V_{GE}=0V, f=1MHz	-	0.52	-	nF
Reverse Transfer Capacitance		C_{res}	V_{CE}=25V, V_{GE}=0V, f=1MHz	-	0.24	-	nF
Switching Time	Rise Time	t_r	V_{CC}=300V I_C=75A R_G=3Ω V_{GE}=±15V	-	60	-	ns
	Turn-On Time	$t_{d,on}$		-	85	-	
	Fall Time	t_f		-	67	-	
	Turn-Off Time	$t_{d,off}$		-	128	-	
Turn-on Energy Loss Per Pulse		E_{on}	I_C=75A , V_{CC}=300V V_{GE}=15V , R_G=3Ω T_{VJ} =25°C , Ls=15nH	-	0.35	-	mJ
Turn-off Energy Loss Per Pulse		E_{off}		-	1.9	-	mJ

■ Free Wheeling Diode Ratings & Characteristics (T_{VJ} = 25℃)

Characteristic	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Peak Forward Voltage	V_F	I_F=75A, V_{GE}=0V	-	1.8	2.5	V
Peak Reverse Recovery Current	I_{RM}	I_F= 75A, R_G=3Ω V_R= 300V, V_{GE}= -15V	-	33	-	A
Recovered Charge	Q_r	I_F= 75A, R_G=3Ω V_R= 300V, V_{GE}= -15V	-	1.58	-	μC
Reverse Recovery Energy	E_{rec}	I_F= 75A, R_G=3Ω V_R= 300V, V_{GE}= -15V	-	0.39	-	mJ
Reverse Recovery Time	T_{rr}	I_F= 75A, R_G=3Ω V_R= 300V, V_{GE}= -15V	-	81	-	ns

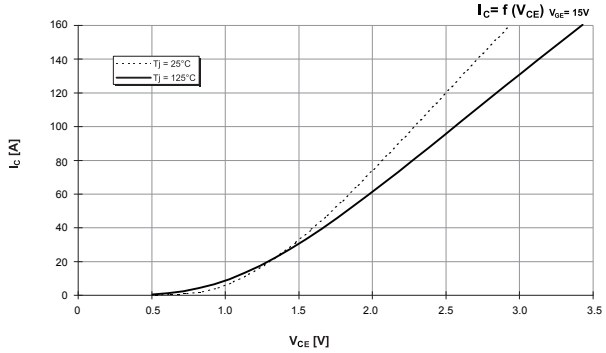
■ Thermal Characteristics (T_C= 25℃)

Characteristic		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Thermal Impedance	IGBT	$R_{th(j-c)}$	Junction to Case	-	-	0.35	℃/W
	Diode			-	-	0.60	

Typical Characteristics

Preliminary Data

Fig.1 Output characteristic (Typical)



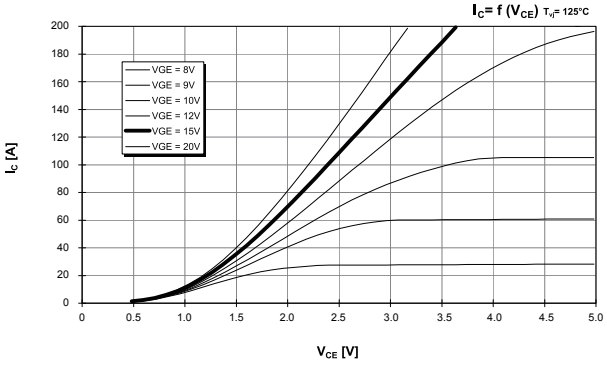


Fig.2 Transfer characteristic (Typical)

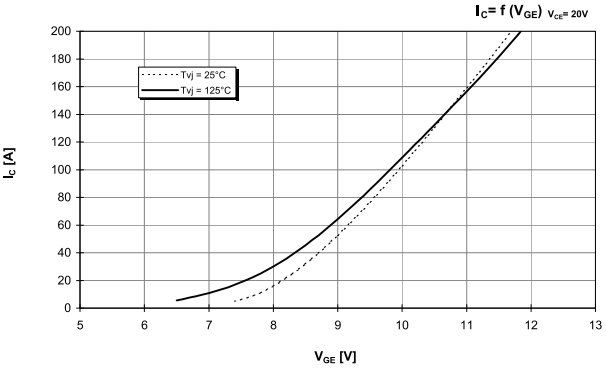


Fig.3 Forward characteristic of inverse diode (typical)

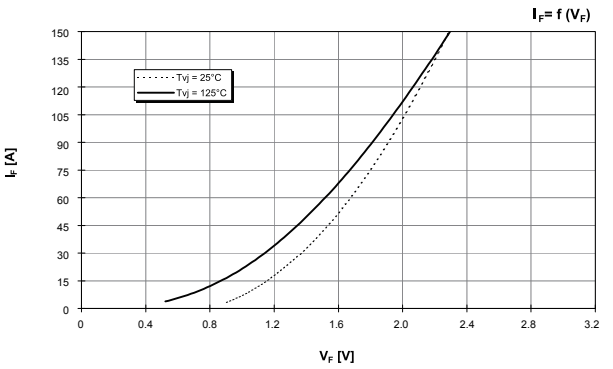
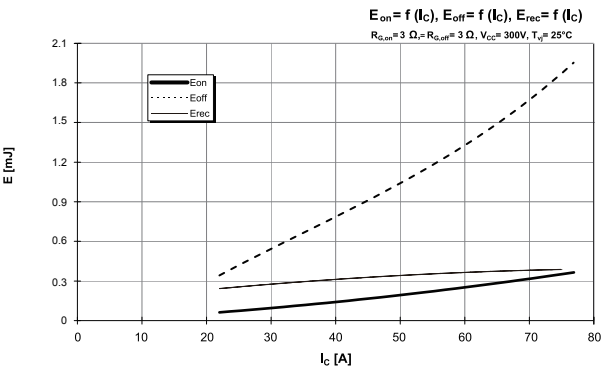


Fig.4 Switching losses (Typical)



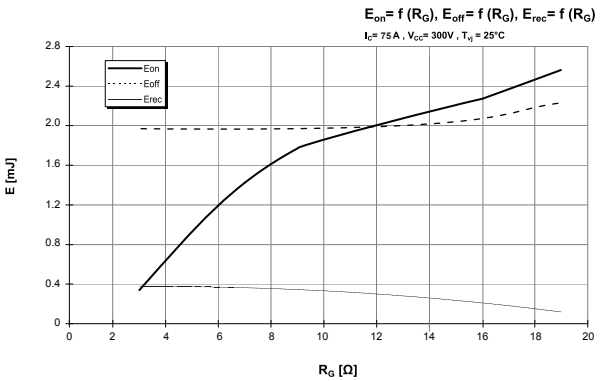


Fig.5 Transient thermal impedance

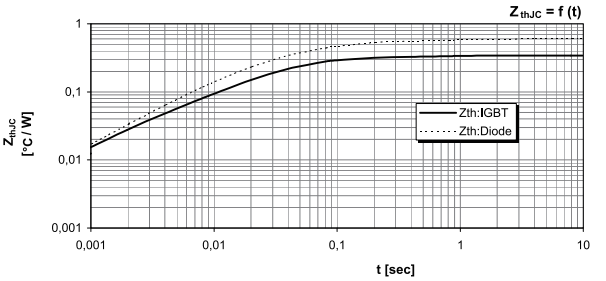


Fig.6 Reverse bias safe operation area (RBSOA)