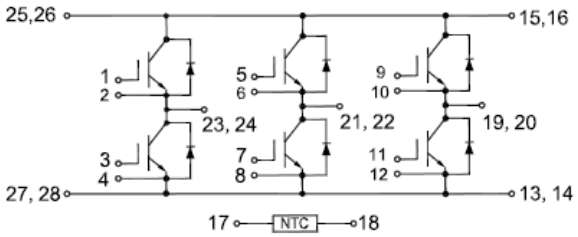
GK75FF60T5H
IGBT Module

Features：



- Non Punch Through (NPT) Technology
- Short Circuit Rated>10μs
- Low Saturation Voltage
- 100% RBSOA Tested(2×Ic)
- Low Stray Inductance
- Lead Free, Compliant with RoHS Requirement

Applications：

- Industrial Inverters
- Servo Applications

IGBT, Inverter
Maximum Rated Values (T_C=25℃unless otherwise specified)

V_{CES}	Collector-Emitter Blocking Voltage		600	V
V_{GES}	Gate-Emitter Voltage		±20	V
I_C	Continuous Collector Current	T_C = 80℃	75	A
		T_C = 25℃	90	A
I_{CM}	Repetitive Peak Collector Current	T_J = 150℃	150	A
t_{SC}	Short Circuit Withstand Time		>10	μs
P_D	Maximum Power Dissipation per IGBT	T_C = 25℃ T_{Jmax}=150℃	310	W

Electrical Characteristics of IGBT (T_C=25℃unless otherwise specified)

Static Characteristics

Symbol	Description	Conditions		Min	Typ	Max	Unit
$V_{GE(th)}$	Gate-Emitter Threshold Voltage	I_C = 1 mA, V_{CE} = V_{GE}		3.0	4.5	5.0	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 75 A, V_{GE} = 15V	T_J = 25℃		1.80	2.10	V
			T_J = 125℃		2.00		V
I_{CES}	Collector-Emitter Leakage Current	V_{GE} = 0V, V_{CE} = V_{CES}, T_J = 25℃				1	mA
I_{GES}	Gate-Emitter Leakage Current	V_{GE} = ±20V, V_{CE} = 0V, T_J = 25℃				200	nA
C_{ies}	Input Capacitance	V_{CE} = 25V, V_{GE} = 0V, f =1MHz			3.6		nF
C_{oes}	Output Capacitance				0.45		nF

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	V_{CC} = 300V, I_C = 75A, R_G = 20 Ω,V_{GE} = ±15V, Inductive Load	T_J = 25℃		105		ns
			T_J = 125℃		100		
t_r	Rise Time		T_J = 25℃		90		ns
			T_J = 125℃		90		
$t_{d(off)}$	Turn-off Delay Time		T_J = 25℃		240		ns
			T_J = 125℃		250		
t_f	Fall Time		T_J = 25℃		90		ns
			T_J = 125℃		110		
E_{on}	Turn-on Switching Loss		T_J = 25℃		0.52		mJ
			T_J = 125℃		0.93		
E_{off}	Turn-off Switching Loss		T_J = 25℃		0.90		mJ
			T_J = 125℃		1.43		
Q_g	Total Gate Charge		T_J = 25℃		260		nC
RBSOA	Reverse Bias Safe Operation Area	I_C=150A, V_{CC}=480V, Vp=600V, R_G = 20Ω, V_{GE}=+15V to 0V, T_J =150°C		Trapezoid			
SCSOA	Short Circuit Safe Operation Area	V_{CC} = 300V, V_{GE} = 15V, T_J = 150℃		10			μs
$R_{\theta JC}$	IGBT Thermal Resistance: Junction-To-Case					0.40	℃/W

Diode, Inverter

Maximum Rated Values (T_C=25℃unless otherwise specified)

V_{RRM}	Repetitive Peak Reverse Voltage	600	V
I_F	Diode Continuous Forward Current	75	A
I_{FM}	Diode Maximum Forward Current	150	A

Electrical Characteristics of FWD (T_C=25℃unless otherwise specified)

Symbol	Description	Conditions		Min	Typ	Max	Unit
V_{FM}	Forward Voltage	I_F = 75 A	T_J = 25℃		1.50	1.60	V
			T_J = 125℃		1.50		
I_{rr}	Peak Reverse Recovery Current	I_F=75A, di/dt =840A/μs, V_{rr} = 300V, V_{GE} = -15V	T_J = 25℃		40		A
			T_J = 125℃		50		
Q_{rr}	Reverse Recovery Charge		T_J = 25℃		2.9		μC
			T_J = 125℃		4.7		
E_{rec}	Reverse Recovery Energy		T_J = 25℃		0.38		mJ
			T_J = 125℃		0.95		
$R_{\theta JC}$	Diode Thermal Resistance: Junction-To-Case					0.88	℃/W

Internal NTC-Thermistor Characteristic

Symbol	Description		Min.	Typ.	Max.	Units.
R_{25}	Rated Resistance	T_C=25℃		5		kΩ
△R/R	Deviation of R100	T_C=100℃，R_{100}=481Ω	-5		5	%
P_{25}	Power Dissipation	T_C=25℃			10	mW
$B_{25/50}$	B-Value	$R_2=R_{25}\exp[B_{25/50}(1/T_2-1/(298.15K))]$		3380		K
$B_{25/80}$	B-Value	$R_2=R_{25}\exp[B_{25/80}(1/T_2-1/(298.15K))]$		3440		K
$B_{25/100}$	B-Value	$R_2=R_{25}\exp[B_{25/100}(1/T_2-1/(298.15K))]$		3545		K

Module

Symbol	Description		Min	Typ	Max	Unit
V_{iso}	Isolation Voltage (All Terminals Shorted)	RMS, f=50Hz, 1minute	2500			V
T_J	Maximum Junction Temperature				150	℃
T_{JOP}	Maximum Operating Junction Temperature Range		-40		+150	℃
T_{stg}	Storage Temperature		-40		+125	℃
$R_{\theta CS}$	Case-To-Sink Thermally (Conductive Grease Applied)				0.03	℃/W
M	Mounting Torque for Module Mounting	Screw M5--Mounting according to valid application note	3.0		5.0	N·m
G	Weight			190		g

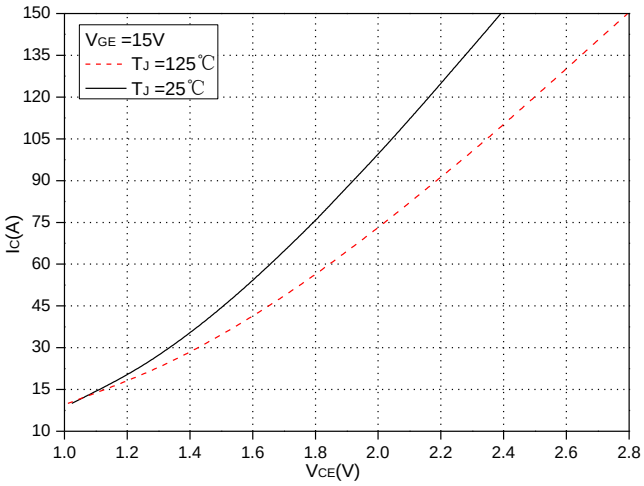


Fig.1 Typical Saturation Voltage Characteristics

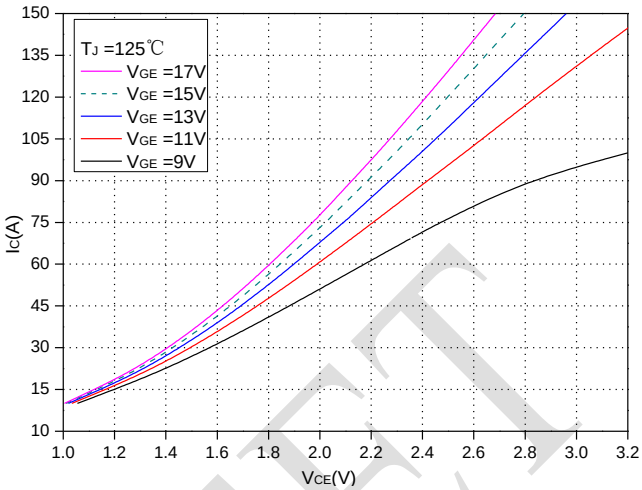


Fig.2 Typical Output Characteristics

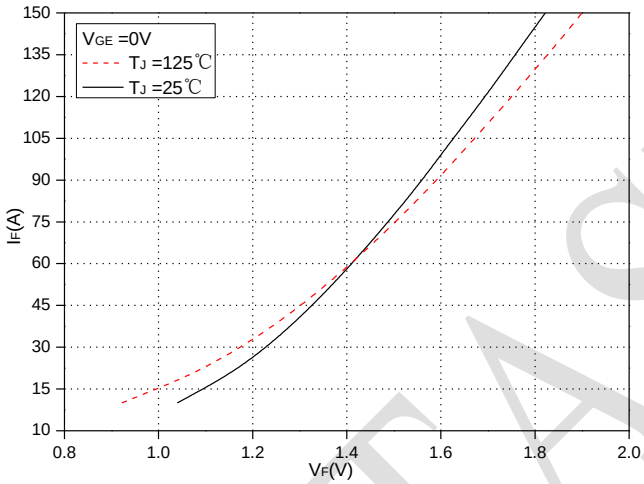


Fig.3 Forward Characteristics of FWD

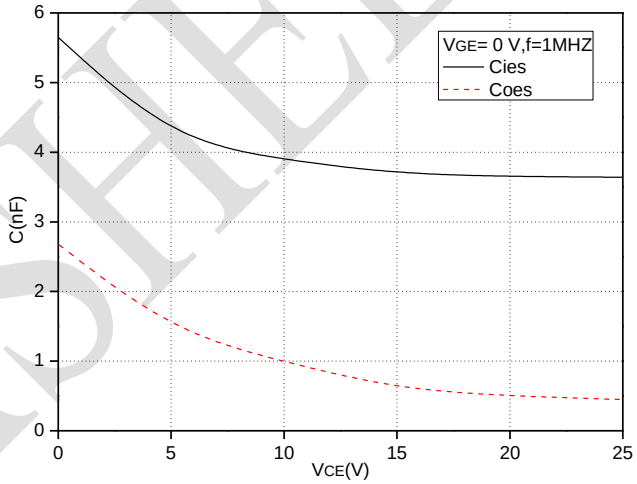


Fig.4 Capacitance Characteristics

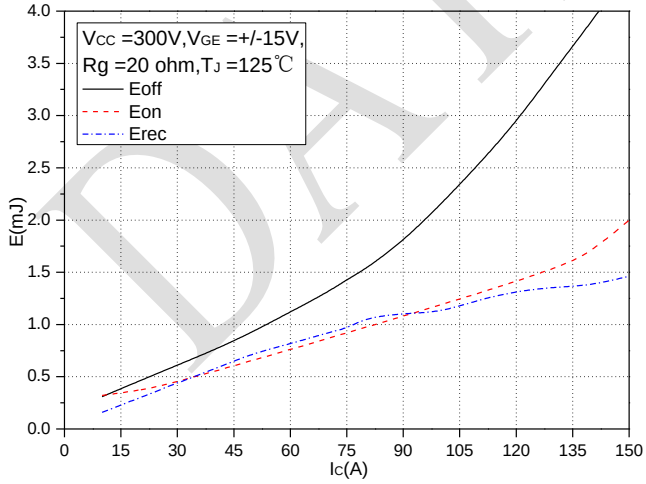


Fig.5 Typical Switching Loss vs. Collector Current

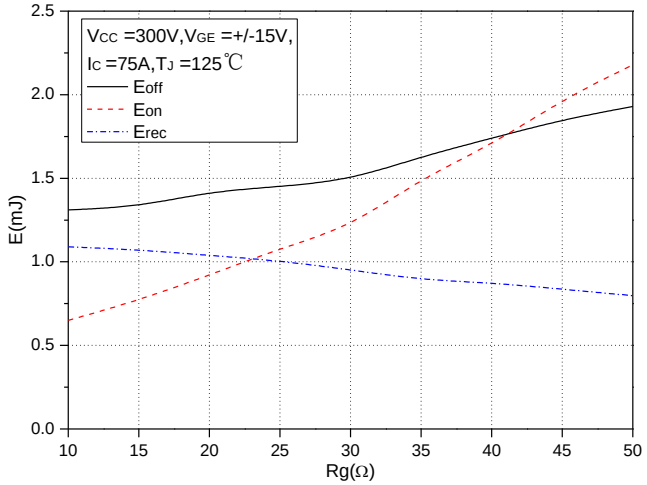


Fig.6 Typical Switching Loss vs. Gate Resistance

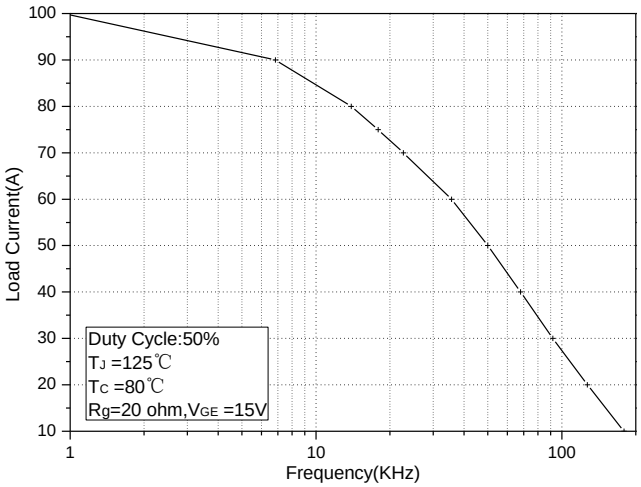


Fig.7 Typical Load Current vs. Frequency

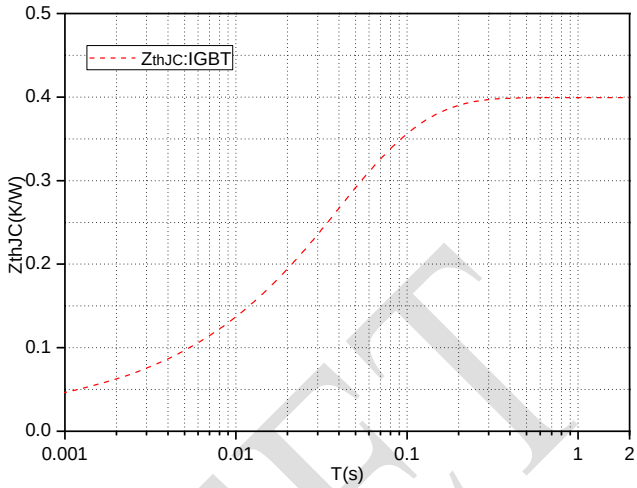


Fig.8 Transient Thermal Impedance (IGBT)

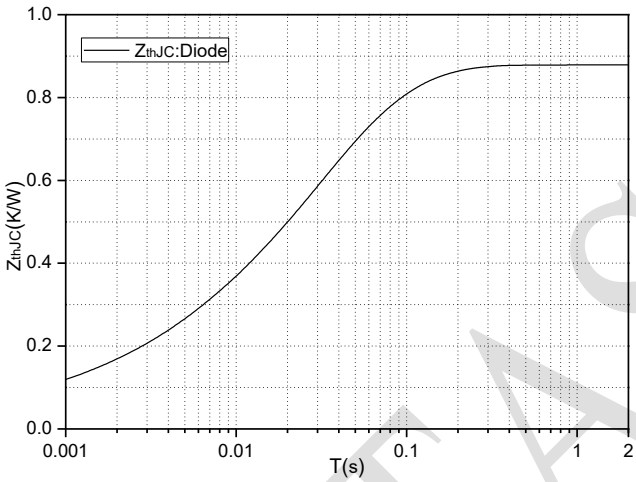


Fig.9 Transient thermal impedance (Diode)

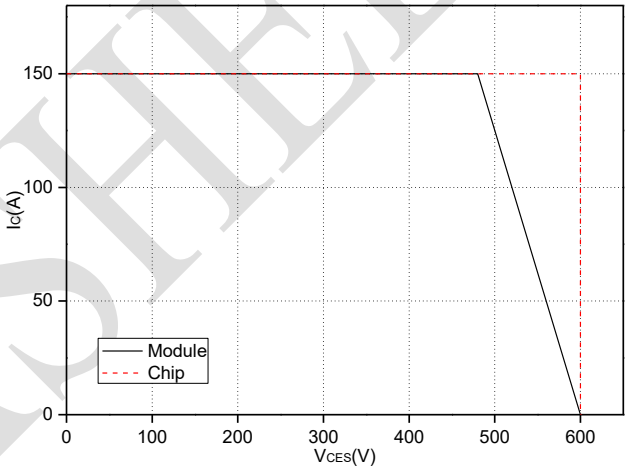


Fig.10 Reverse Bias Safe Operation Area (RBSOA)

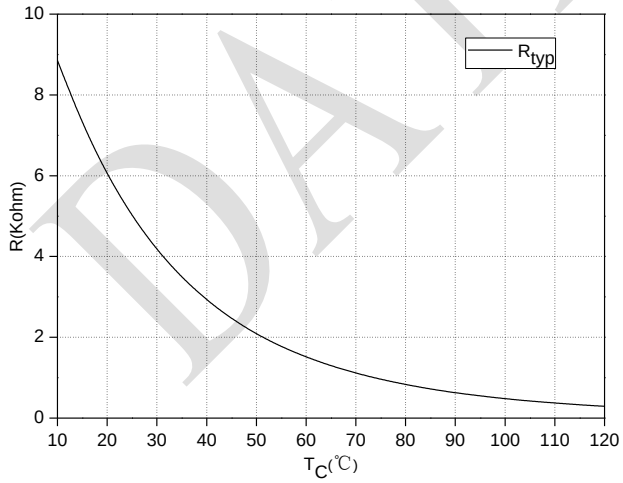
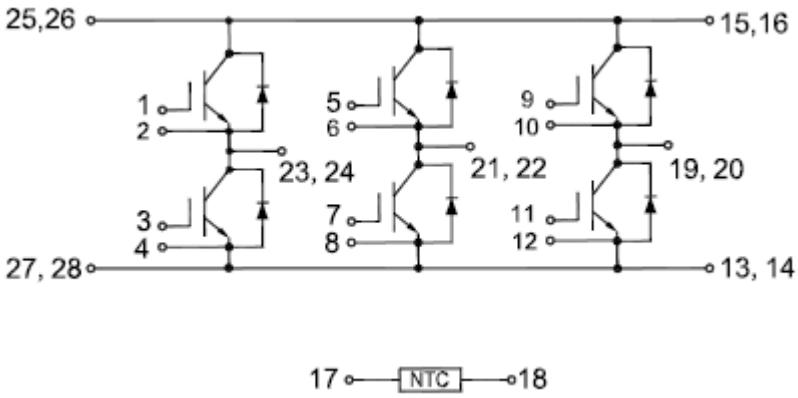
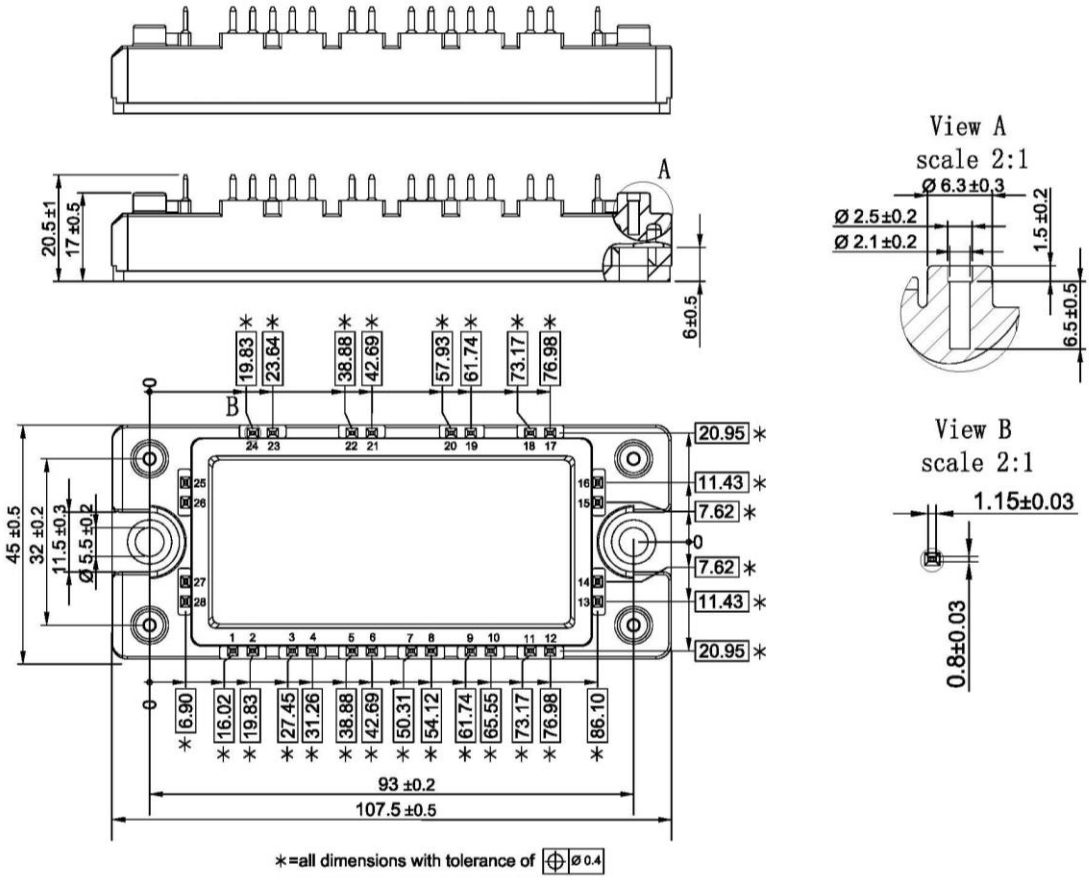


Fig.11 NTC Temperature Characteristics

Internal Circuit:



Package Outline (Unit: mm):



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