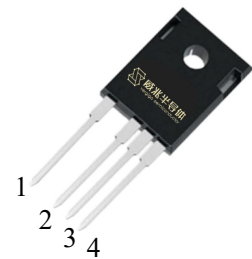
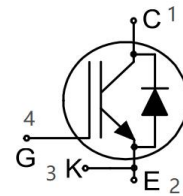


HCKZ75N65GH2 is a **650V75A** IGBT discrete with high speed soft switching of Trench Field stop technology. The product with a SiC diode, has the characteristics of low V_{CESAT} , high junction temperature and strong robustness. It is very suitable for products with high switching frequency.

■ Features

- CoolWatt® II Trench-FS technology
- Low V_{CESAT}
- Low switching losses
- With anti-parallel SiC diode
- Positive temperature coefficient
- High reliability



TO-247-4L

■ Applications

- Inverter power supply
- UPS
- PV

Part ID	$V_{CE}(V)$	$I_{CNOM}(A)$	$V_{CESAT@25^{\circ}C}(V)$	Package	Marking	Packing
HCKZ75N65GH2	650	75	1.80	TO-247-4L	K75H65G2	30PCS/Tube,20 Tubes/Box

■ Maximum Rated Values

Symbol	Parameter	Condition	Value	Unit
V_{CES}	Collector-emitter voltage	$T_{vj}=25^{\circ}C$	650	V
I_C	DC collector current	$T_C = 25^{\circ}C$	150	A
		$T_C = 100^{\circ}C$	75	
I_{Cpuls}	Pulse collector current	$T_{vj} \leq 150^{\circ}C$	225	A
V_{RRM}	Repetitive peak reverse voltage	$T_{vj}=25^{\circ}C$	650	V
I_F	Diode continuous forward current	$T_C = 25^{\circ}C$	45	A
		$T_C = 100^{\circ}C$	30	
I_{Fpuls}	Diode pulse current	$T_{vj} \leq 150^{\circ}C$	90	A
V_{GE}	Gate-emitter voltage	$T_{vj}=25^{\circ}C$	± 20	V
		Transient ($t_p \leq 10\mu S, D < 0.01$)	± 30	

P_{tot}	Power dissipation	$T_C = 25^\circ\text{C}$	625	W
T_{vj}	Operating junction temperature		-40~+175	$^\circ\text{C}$
T_{stg}	Storage temperature		-50~ +150	$^\circ\text{C}$
M	Mounting torque	M3	0.6	Nm

■ Thermal Characteristic

Symbol	Parameter	Maximum	Unit
$R_{thJC-IGBT}$	IGBT thermal resistance junction-case	0.24	K/W
$R_{thJC-Diode}$	Diode thermal resistance junction-case	1.2	K/W
R_{thJA}	Thermal resistance junction-ambient	40	K/W

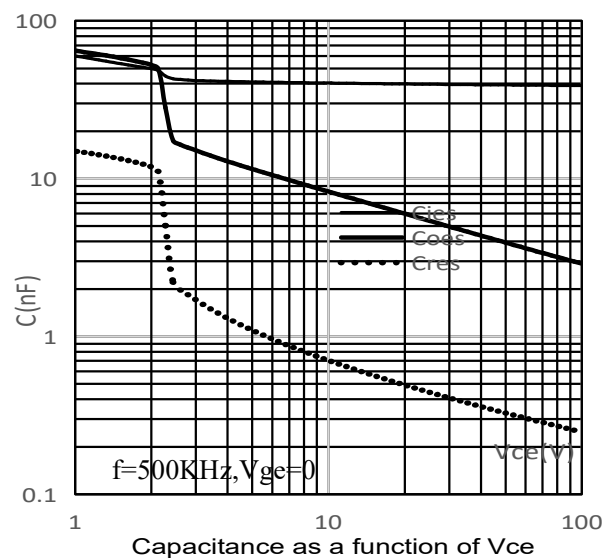
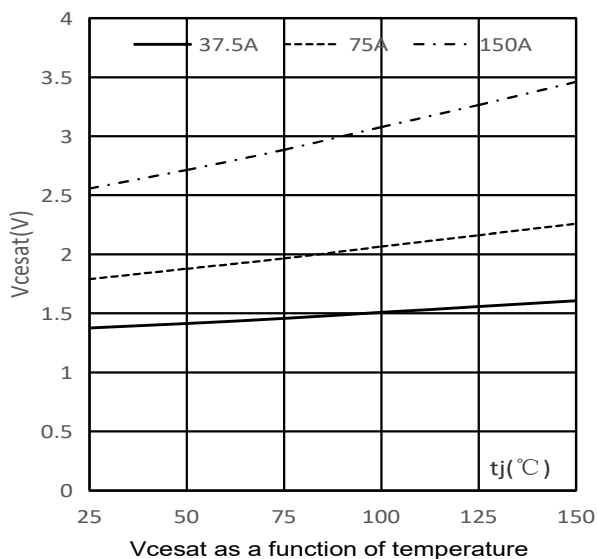
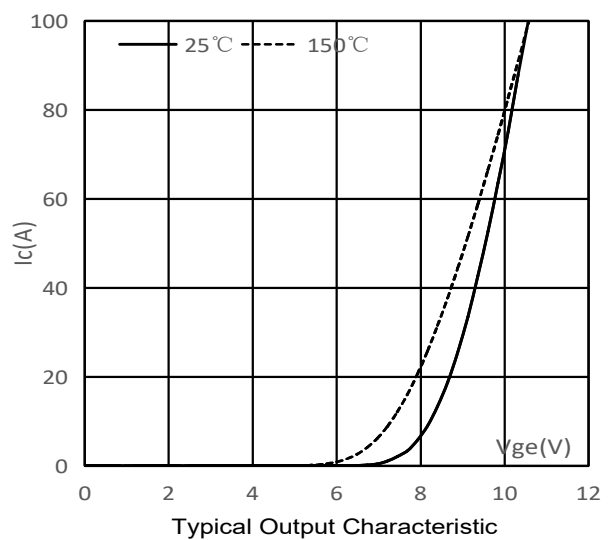
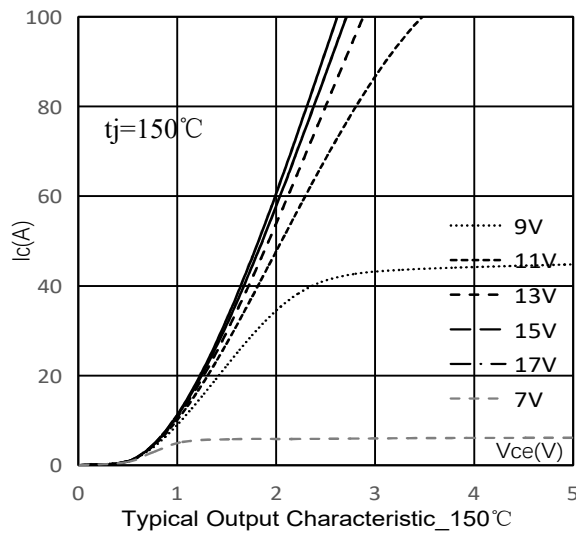
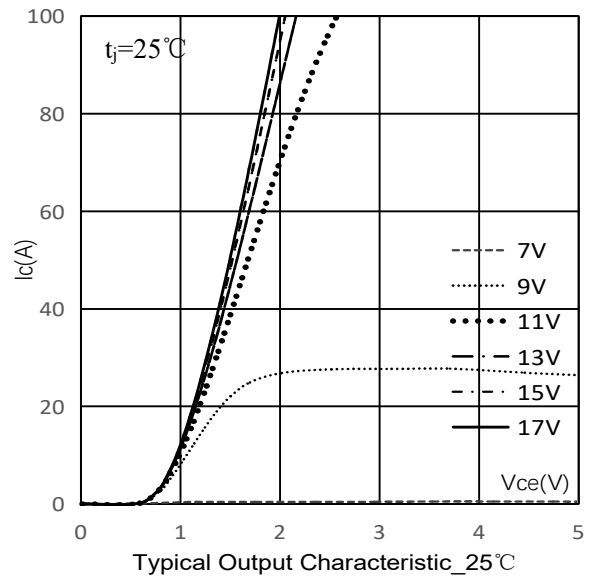
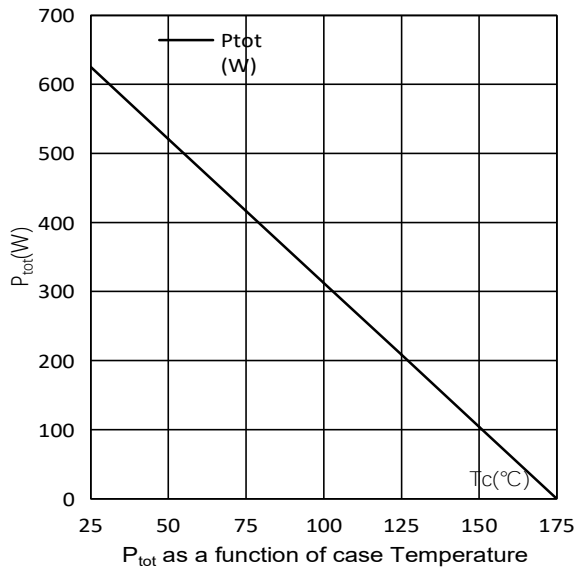
■ Electrical Characteristic

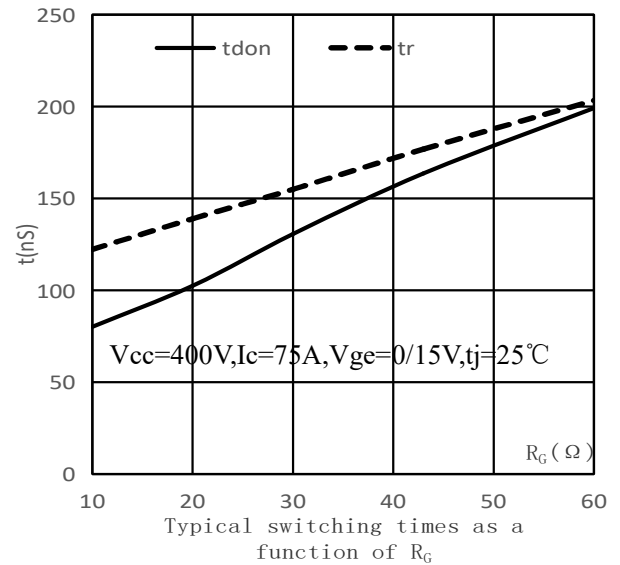
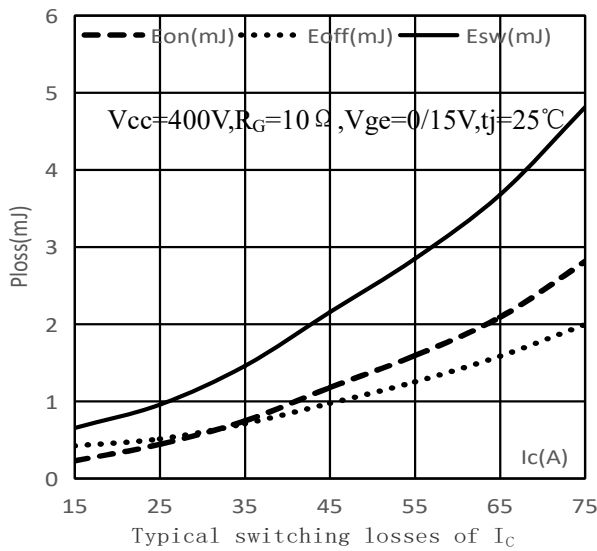
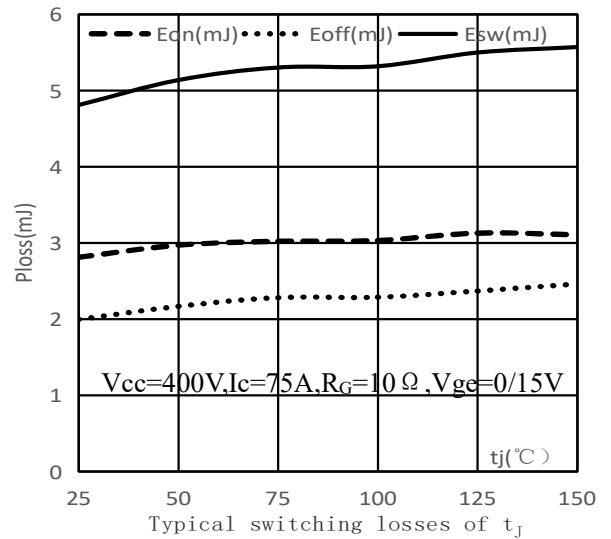
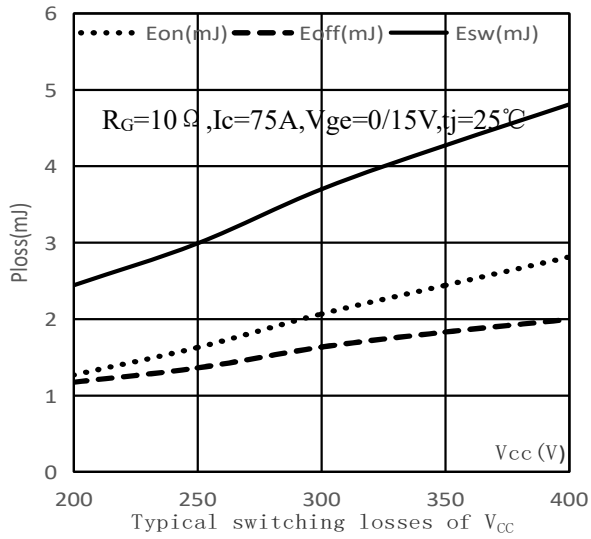
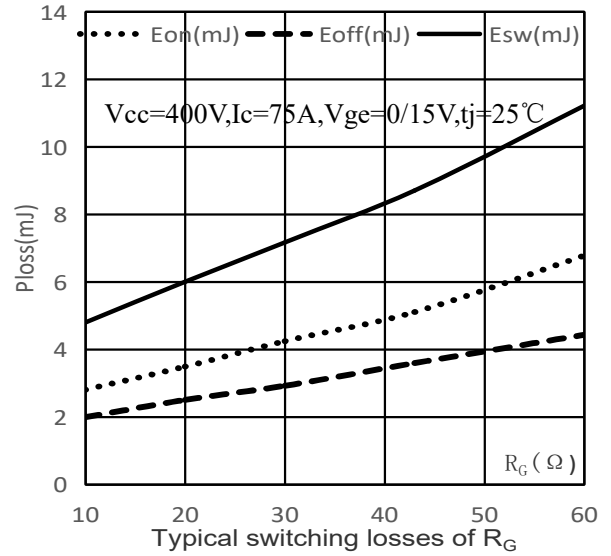
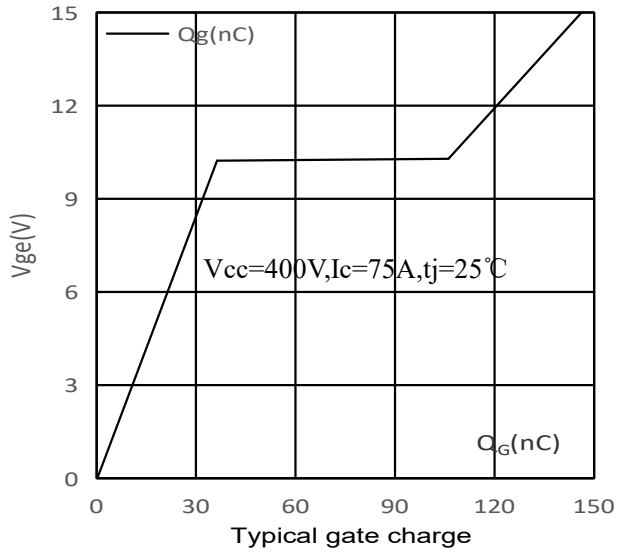
Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
$V_{(BR)CES}$	Collector-emitter breakdown voltage	$V_{GE} = 0V,$ $I_C = 0.25mA, T_{vj} = 25^\circ\text{C}$	650	—	—	V
$V_{CE(sat)}$	Collector-emitter saturation voltage	$V_{GE} = 15V, I_C = 75A, T_{vj} = 25^\circ\text{C}$ $T_{vj} = 150^\circ\text{C}$	— —	1.80 2.35	2.00 —	
$V_{GE(th)}$	Gate-emitter threshold voltage	$V_{GE} = V_{CE}, I_C = 1.5mA, T_{vj} = 25^\circ\text{C}$	5.10	5.70	6.40	
V_F	Diode forward voltage	$V_{GE} = 0V, I_F = 30A, T_{vj} = 25^\circ\text{C}$ $T_{vj} = 150^\circ\text{C}$	— —	1.42 1.74	1.75 —	
I_{GES}	Zero collector voltage gate current	$V_{GE} = 30V, V_{CE} = 0V$	—	—	200	nA
I_{CES}	Zero gate voltage collector current	$V_{CE} = 650V, V_{GE} = 0V, T_{vj} = 25^\circ\text{C}$ $T_{vj} = 150^\circ\text{C}$	— —	—	0.20 1.00	mA
R_{Gin}	Integrated gate resistor	—	—	0	—	Ω
C_{ies}	Input capacitance	$V_{GE} = 0V, V_{CE} = 30V,$ $f = 1MHz, T_{vj} = 25^\circ\text{C}$	—	3910	—	pF
C_{oes}	Output capacitance		—	244	—	
C_{res}	Reverse transfer capacitance		—	34.0	—	
Q_g	Gate charge	$V_{GE} = 0/15V, V_{cc} = 400V, I_C = 75A,$ $T_{vj} = 25^\circ\text{C}$	—	146	—	nC
Q_{ge}	Gate-emitter charge		—	36.2	—	
Q_{gc}	Gate-collector charge		—	69.5	—	
$V_{GE(pl)}$	Gate-emitter plateau voltage	$I_C = 75A, V_{CE} = 520V,$ $V_{GE} = 0/15V, T_{vj} = 25^\circ\text{C}$	—	10.3	—	V

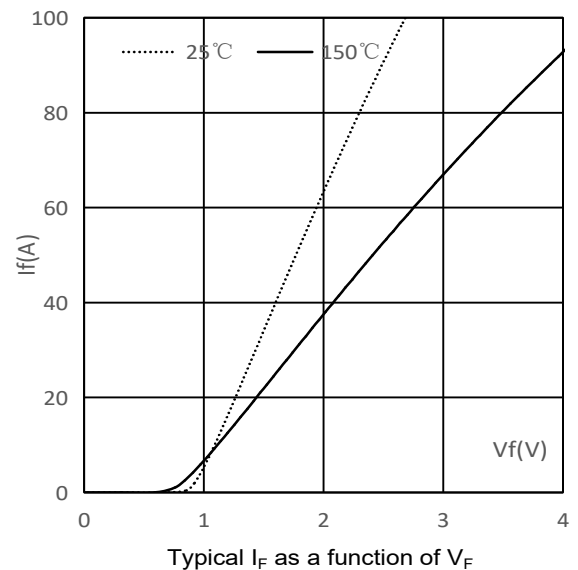
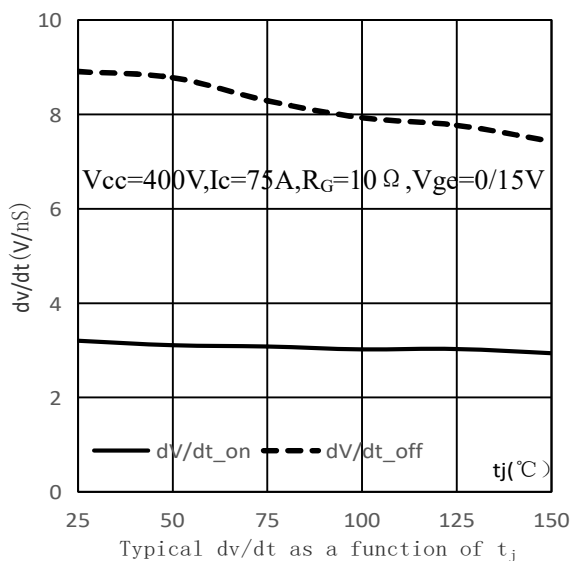
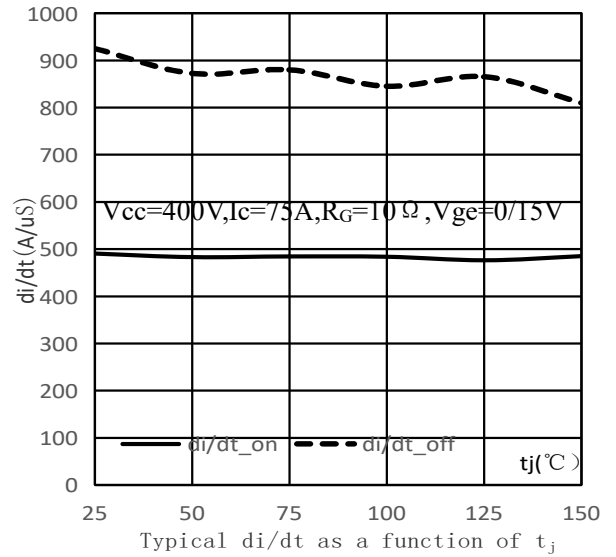
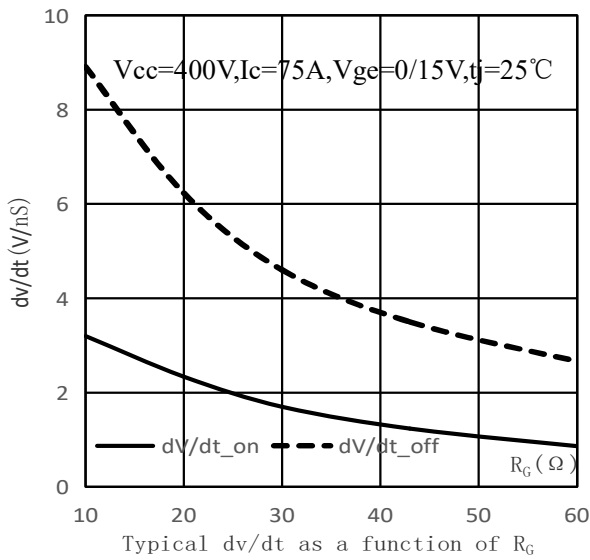
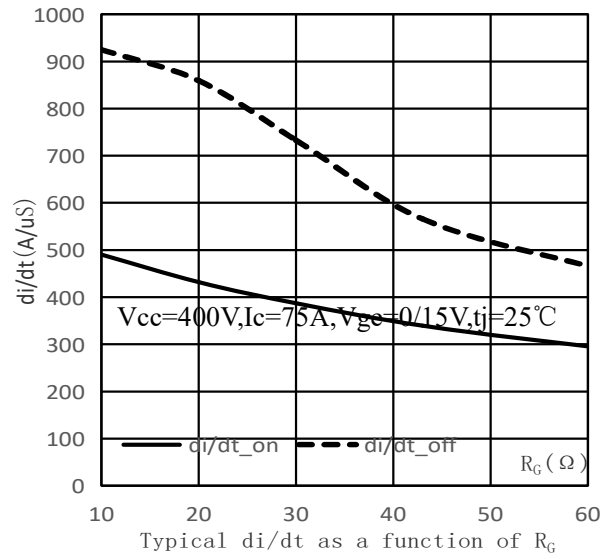
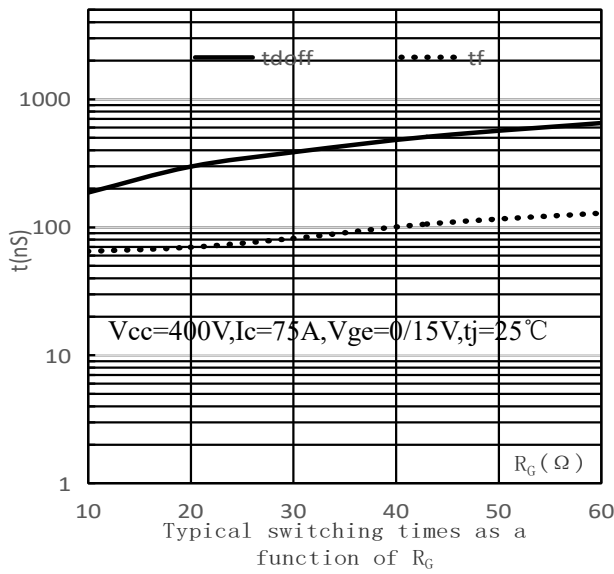
■ Dynamic Characteristic (With inductive load)

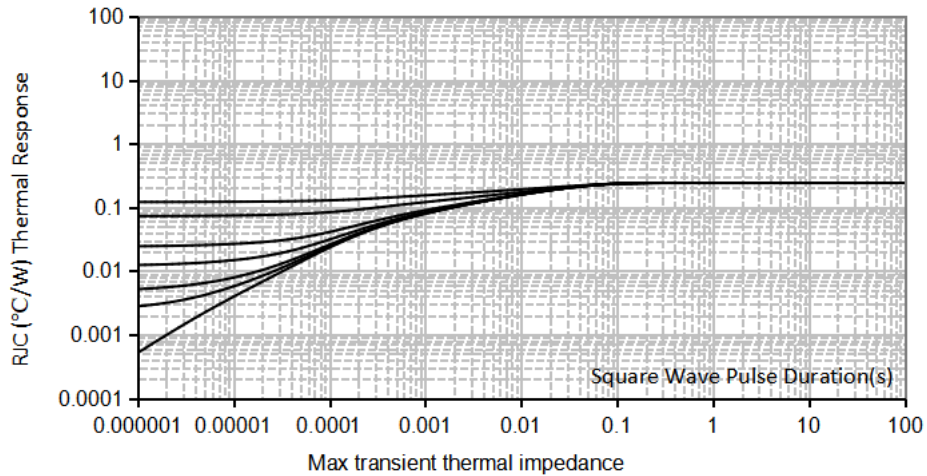
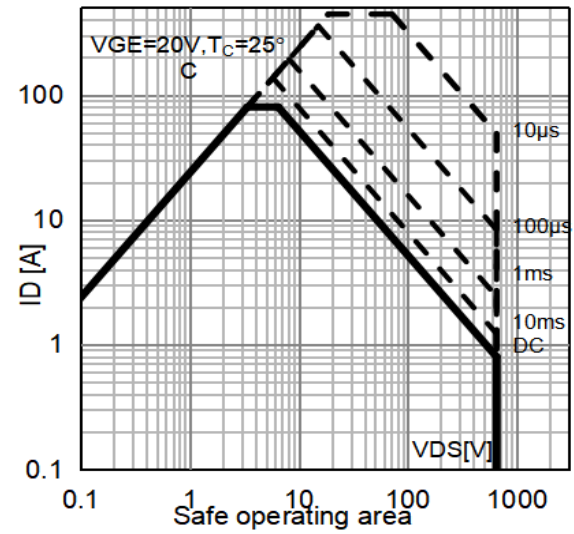
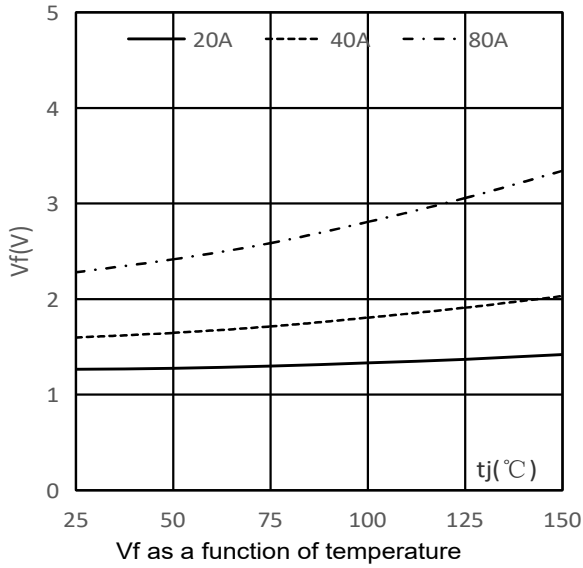
Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
IGBT Characteristic_25°C :						
$T_{d(on)}$	Turn-on delay time	$V_{CC}=400V, I_c=75A,$ $R_{on}=10\ \Omega, R_{off}=10\ \Omega,$ $C_{ge}=0nF, V_{GE}=0/15V,$ $L_{load}=60uH, T_{vj}=25^\circ C$	—	80.2	—	ns
T_r	Rise time		—	122	—	
$T_{d(off)}$	Turn-off delay time		—	187	—	
t_f	Fall time		—	65.0	—	
E_{on}	Turn-on energy		—	2.81	—	mJ
E_{off}	Turn-off energy		—	2.00	—	
E_{total}	Total switch energy		—	4.81	—	
IGBT Characteristic_150°C :						
$T_{d(on)}$	Turn-on delay time	$V_{CC}=400V, I_c=75A,$ $R_{on}=10\ \Omega, R_{off}=10\ \Omega,$ $C_{ge}=0nF, V_{GE}=0/15V,$ $L_{load}=60uH, T_{vj}=150^\circ C$	—	74.8	—	ns
T_r	Rise time		—	124	—	
$T_{d(off)}$	Turn-off delay time		—	207	—	
t_f	Fall time		—	74.1	—	
E_{on}	Turn-on energy		—	3.12	—	mJ
E_{off}	Turn-off energy		—	2.46	—	
E_{total}	Total switch energy		—	5.58	—	

■ Characteristic Curve





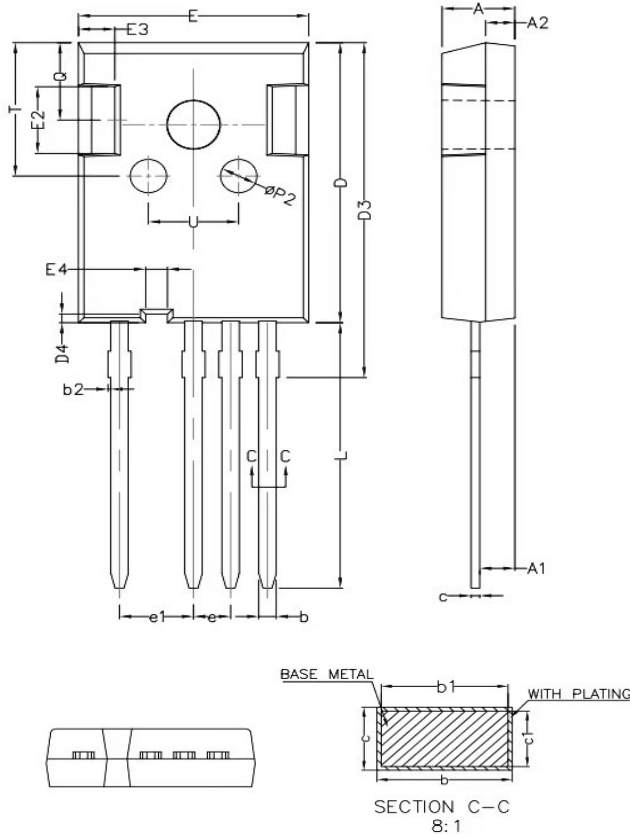




In descending order

D=0.5,0.3,0.1,0.05,0.02,0.01,single pulse

■ Package Outline Data_TO-247-4L



SYMBOL	MIN	NOM	MAX
A	4.90	5.00	5.10
A1	2.31	2.41	2.51
A2	1.90	2.00	2.10
b	1.16	-	1.29
b1	1.15	1.20	1.25
b2	0	-	0.20
c	0.59	-	0.66
c1	0.58	0.60	0.62
D	20.90	21.00	21.10
D1	16.25	16.55	16.85
D2	1.05	1.20	1.35
D3	24.97	25.12	25.27
D4	0.55	0.65	0.75
E	15.70	15.80	15.90
E1	13.10	13.30	13.50
E2	4.90	5.00	5.10
E3	2.40	2.50	2.60
E4	1.40	1.50	1.60
e	2.44	2.54	2.64
e1	4.98	5.08	5.18
L	19.80	19.92	20.10
P	3.50	3.60	3.70
P1	-	-	7.40
P2	2.40	2.50	2.60
Q	5.60		6.00
S	6.15BSC		
T	9.80	-	10.20
U	6.00	-	6.40

Unit:mm