

Insulated Gate Bipolar Transistor

General Description:

Using DongHai's proprietary Planar design and advanced FS technology, the 1200V FS IGBT offers superior conduction and switching performances, high avalanche ruggedness and easy parallel operation.

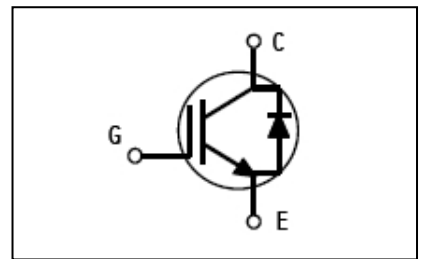
Features:

- FS Trench Technology, Positive temperature coefficient
- Low saturation voltage: $V_{CE(sat)}$, typ = 2.0V
@ $I_C = 25A$ and $T_C = 100^\circ C$
- Extremely enhanced avalanche capability

Applications:

Aircondition、Welding、UPS...

V_{CES}	1200	V
I_C	25	A
P_{tot} ($T_C=25^\circ C$)	278	W
$V_{CE(SAT)}$	2.0	V



Absolute Maximum Ratings ($T_C = 25^\circ C$ unless otherwise specified):

Symbol	Parameter	Rating	Units
V_{CES}	Collector-Emitter Voltage	1200	V
V_{GES}	Gate- Emitter Voltage	± 20	V
I_C	Collector Current	50	A
	Collector Current @ $T_C = 100^\circ C$	25	
I_{CM}^{a1}	Pulsed Collector Current	75	A
I_F	Diode Continuous Forward Current @ $T_C = 100^\circ C$	25	A
I_{FM}	Diode Maximum Forward Current	75	A
P_D	Power Dissipation @ $T_C = 25^\circ C$	278	W
	Power Dissipation @ $T_C = 100^\circ C$	111	
T_J	Maximum Temperature for Soldering	150	$^\circ C$
T_{stg}	Operating Junction and Storage Temperature Range	-55~150	$^\circ C$
T_L	Maximum Temperature for Soldering	300	$^\circ C$

Thermal Characteristics

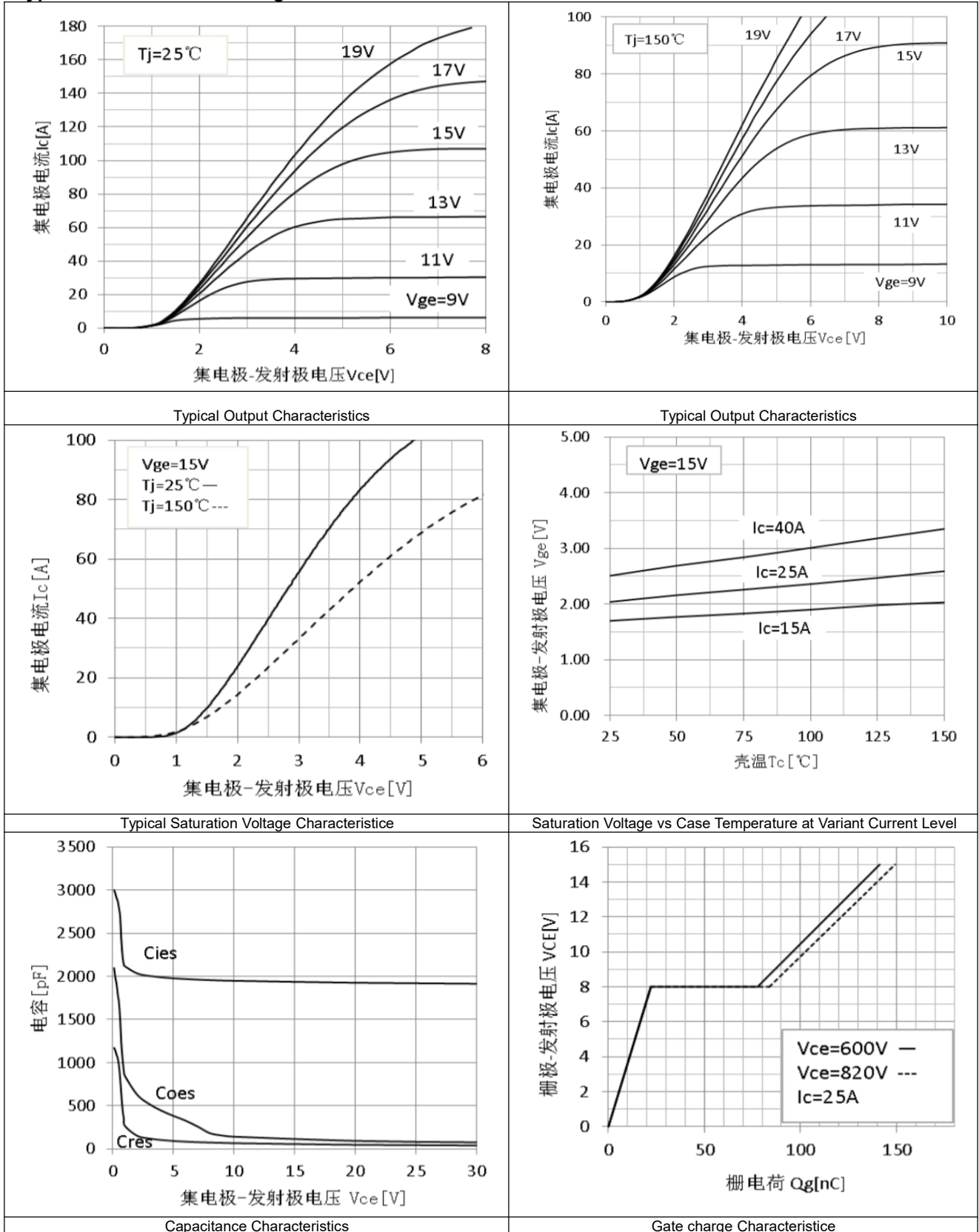
Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction to case for IGBT	--	0.45	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	--	52	$^\circ C/W$

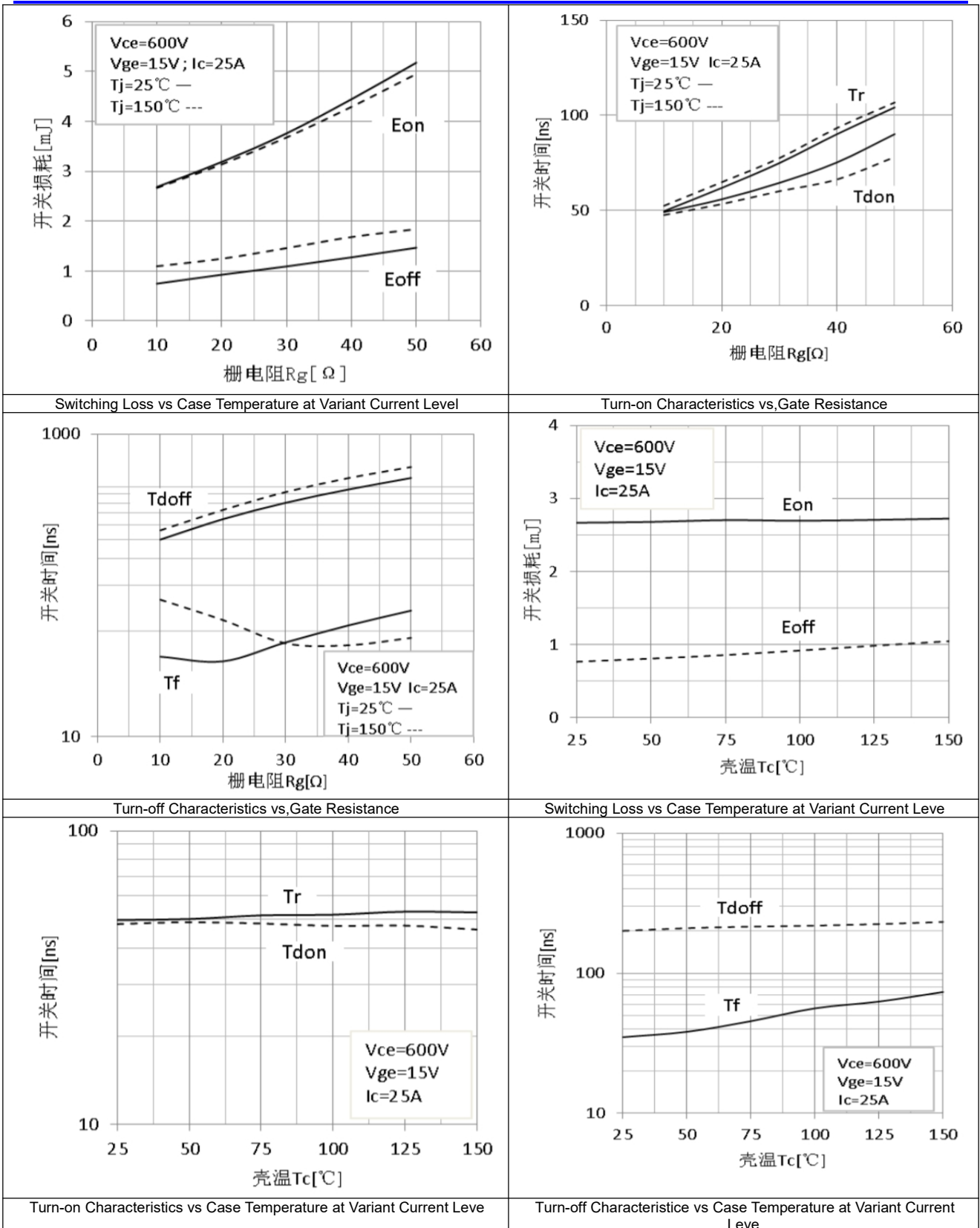
ELECTRICAL CHARACTERISTICS (Ta=25°C)

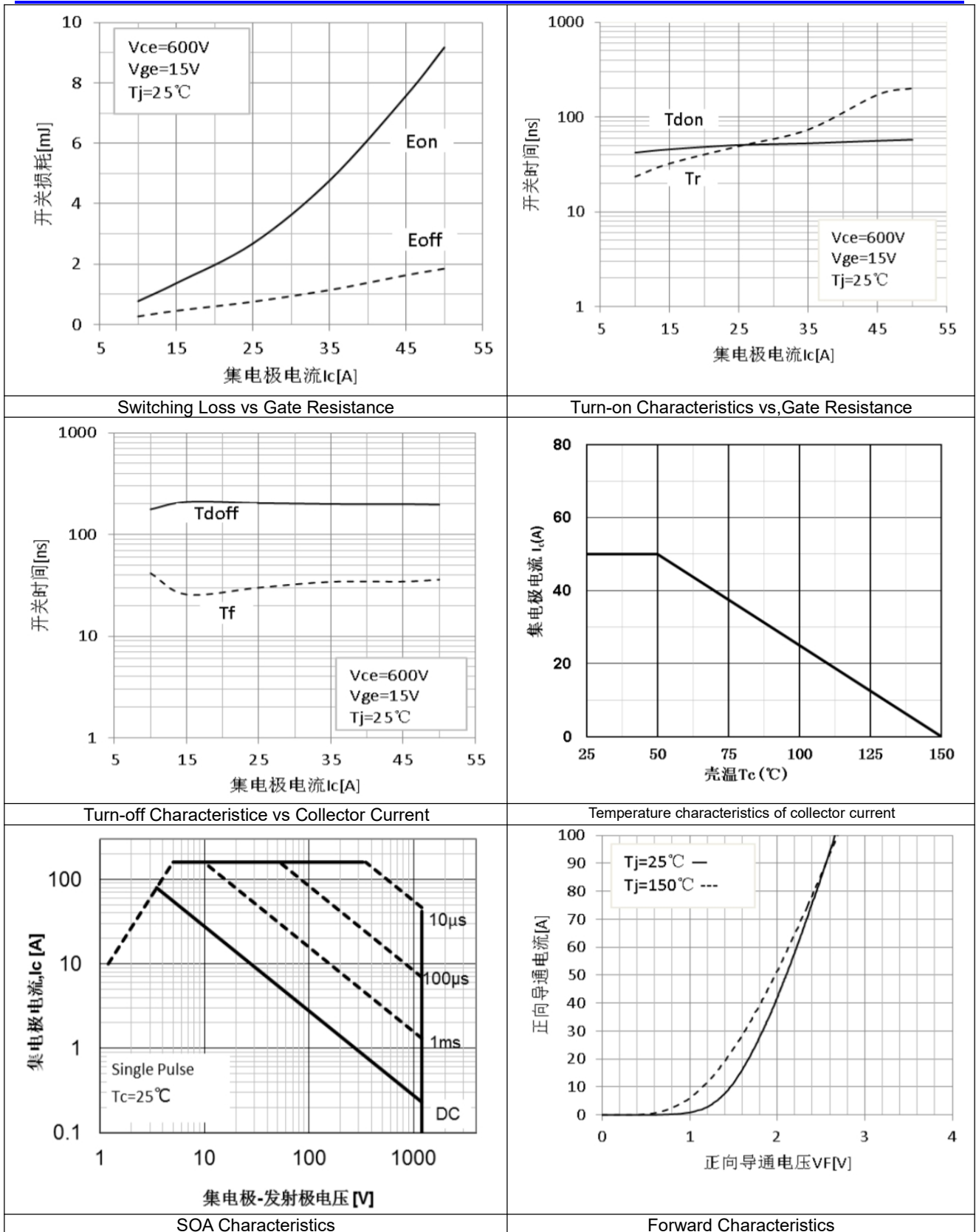
SYMBOL	CHARACTERISTIC	TEST CONDITION	Norm value			UNIT
			MIN	TYP	MAX	
Static						
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage	$V_{GE}=0V, I_{CE}=250\mu A$	1200	--	--	V
I_{CES}	Collector-Emitter Leakage Current	$V_{GE}=0V, V_{CE}=1200V$	--	--	1.0	mA
$I_{GES(F)}$	Gate to Emitter Forward Leakage	$V_{GE}=+20V$	--	--	+250	nA
$I_{GES(R)}$	Gate to Source Reverse Leakage	$V_{GE}=-20V$	--	--	-250	nA
ON Characteristics						
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=25A, V_{GE}=15V$	--	2.0	2.5	V
$V_{GE(th)}$	Gate Threshold Voltage	$I_C=250\mu A, V_{CE}=V_{GE}$	4.5	5.8	7.0	V
pulse width $t_p \leq 380\mu s, \delta \leq 2\%$						
Dynamic characteristics						
C_{ies}	Input Capacitance	$V_{CE}=30V, V_{GE}=0V$ $f=1MHz$	--	1914	--	pF
C_{oes}	Output Capacitance		--	77	--	
C_{res}	Reverse Transfer Capacitance		--	40	--	
Switching characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{CE}=600V, I_C=25A,$ $R_g=10\Omega, V_{GE}=15V,$ Inductive Load, $T_c=25^\circ C$.	--	48	--	ns
t_r	Rise Time		--	50	--	
$t_{d(off)}$	Turn-Off Delay Time		--	200	--	
t_f	Fall Time		--	35	--	
E_{on}	Turn-On Switching Loss		--	2.7	--	mJ
E_{off}	Turn-Off Switching Loss		--	0.8	--	
E_{ts}	Total Switching Loss		--	3.5	--	
Q_g	Total Gate Charge	$V_{CE}=960V, I_C=25A,$ $V_{GE}=15V,$	--	141.2	--	nC
Q_{ge}	Gate to Emitter Charge		--	22.2	--	
Q_{gc}	Gate to Collector Charge		--	77.6	--	
Characteristics of anti parallel diode						
V_F	Diode Forward Voltage	$I_F=25A$	--	2.7	3.2	V

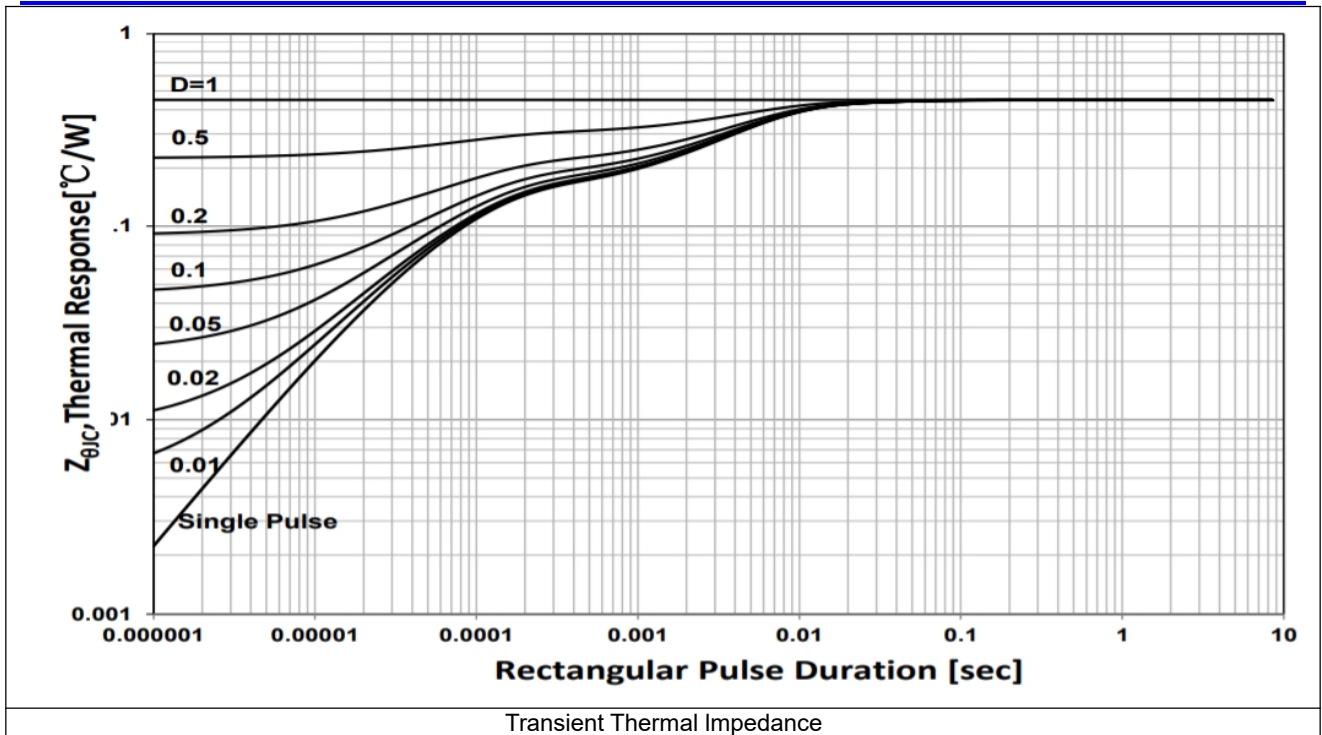
^{a1}: Repetitive rating; pulse width limited by maximum junction temperature

Typical characteristics diagrams



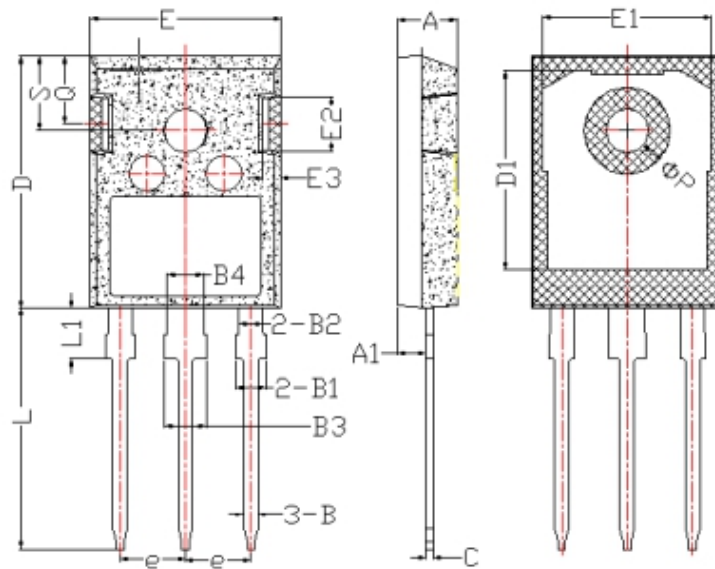






Transient Thermal Impedance

Package Information



TO-247 封装

Items	Values(mm)	
	MIN	MAX
A	4.6	5.2
A1	2.2	2.6
B	0.9	1.4
B1	1.75	2.35
B2	1.75	2.15
B3	2.8	3.35
B4	2.8	3.15
C	0.5	0.7
D	20.60	21.30
D1	16	18
E	15.5	16.10
E1	13	14.7
E2	3.80	5.3
E3	0.8	2.60
e	5.2	5.7
L	19	20.5
L1	3.9	4.6
ΦP	3.3	3.70
Q	5.2	6.00
S	5.8	6.6