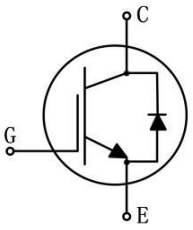
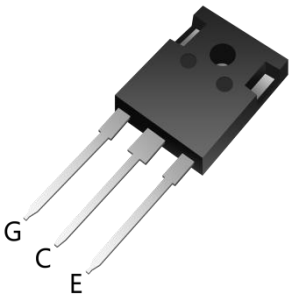
Trench Field-stop IGBT Discrete

Parameter	Value	Unit
V_{CE}	1200	V
I_C	75	A
$V_{CE(sat)}$	1.75	V





TO-247-3L

Features

- Maximum Junction Temperature 175℃
- Low EMI
- Advanced Field Stop Technology
- Pb-free Lead Plating;RoHS Compliant

Applications

- Energy storage
- photovoltaic string inverter
- solar string inverter
- uninterruptible power supply

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CES}	1200	V
Gate-emitter voltage	V_{GES}	±20	V
Continuous collector current(T_C=25℃)	I_C	150	A
Continuous collector current(T_C=100℃)		75	A
Pulsed Collector Current(Note 1)	I_{CM}	300	A
Diode continuous forward current(T_C=25℃)	I_F	150	A
Diode continuous forward current(T_C=100℃)		75	A
Maximum Power Dissipation (T_C=25℃)	P_D	750	W
Short circuit withstand time	t_{sc}	10	us
Operating junction temperature range	T_J	-40 to+175	℃
Storage temperature range	T_{STG}	-55 to+150	℃

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal resistance,junction to case for IGBT	$R_{\theta JC}$	0.2	℃/W
Thermal resistance,junction to ambient	$R_{\theta JA}$	25	℃/W

Electrical Characteristics of IGBT (T_{vj}=25℃ unless otherwise specified)

Static characteristics

Parameter	Symbol	Test condition	Value			Unit
			Min.	Typ.	Max.	
Collector-emitter breakdown voltage	B_{VCES}	V_{GE}=0V,I_C=500μA	1200	-	-	V
Collector-emitter leakage current	I_{CES}	V_{CE}=1200V,V_{GE}=0V	-	-	200	μA
Gate leakage current,forward	I_{GES}	V_{GE}=20V,V_{CE}=0V	-	-	200	nA
Gate Leakage Current,reverse		V_{GE}=-20V,V_{CE}=0V	-	-	200	nA
Gate threshold voltage	$V_{GE(th)}$	V_{GE}=V_{CE},I_C=2.4mA	5	5.8	6.6	V
Collector-emitter saturation voltage	$V_{CE(sat)}$	V_{GE}=15V,I_C=75A(T_J=25℃)	-	1.75	2.2	V
Total gate charge	Q_G	V_{CC}=600V V_{GE}=15V I_C=75A	-	540	-	nC
Input Capacitance	C_{ies}	V_{CE}=25V V_{GE}=0V f=1MHz	-	5748	-	pF
Output Capacitance	C_{oes}		-	334	-	pF
Reverse Transfer Capacitance	C_{res}			185	-	pF

IGBT Switching Characteristics

Parameter	Symbol	Test condition	Value			Unit
			Min.	Typ.	Max.	
Turn-on delay time	$t_{d(on)}$	V_{CC}=600V V_{GE}=±15V I_C=75A R_G=10Ω Inductive load T_C=25℃	-	75	-	ns
Turn-on Rise time	t_r		-	245	-	ns
Turn-off delay time	$t_{d(off)}$		-	172	-	ns
Turn-off Fall time	t_f		-	215	-	ns
Turn-on Switching Loss	E_{on}		-	10.8	-	mJ
Turn-off Switching Loss	E_{off}		-	6.7	-	mJ
Total switching Loss	E_{ts}		-	17.5	-	mJ

Diode Characteristics

Parameter	Symbol	Test condition	Value			Unit
			Min.	Typ.	Max.	
Diode forward voltage	V_F	I_F=75A,T_{vj}=25℃	-	1.8	2.5	V
Diode reverse recovery time	t_{rr}	V_R=600V I_F=75A diF/dt=200A/μs T_C=25℃	-	60	-	ns
Diode peak reverse recovery current	I_{rr}		-	50	-	A
Diode reverse recovery charge	Q_{rr}		-	1200	-	nC

Typical Characteristics

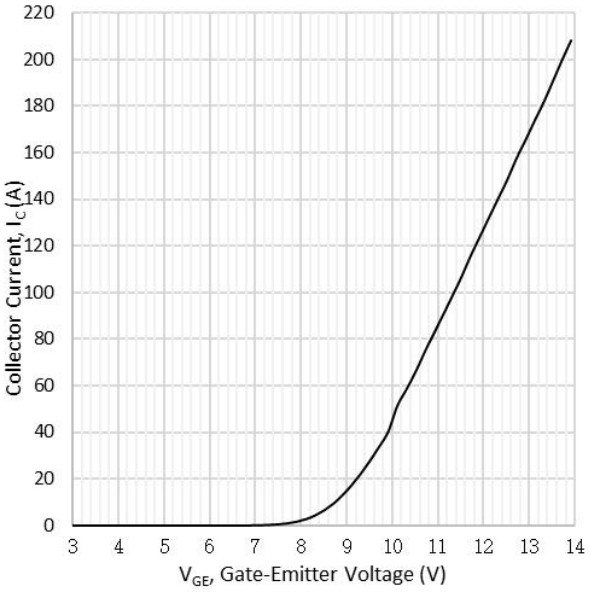


Fig 1.Typical transfer characteristics (V_{CE}=20V)

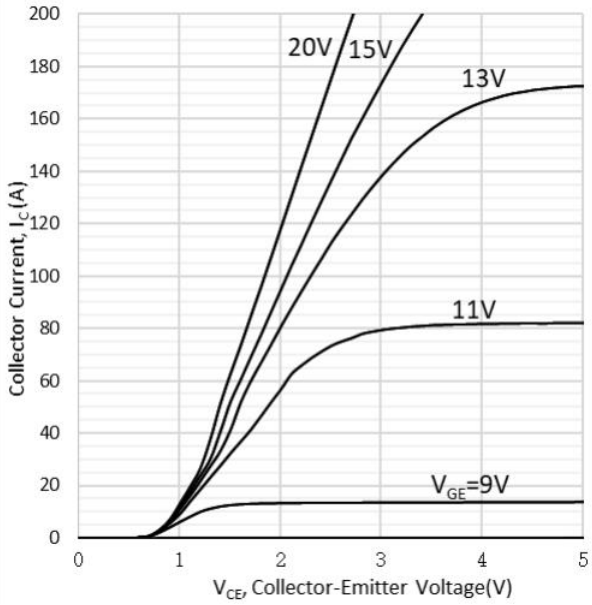


Fig 2.Typical output characteristic(T_{vj}=25℃)

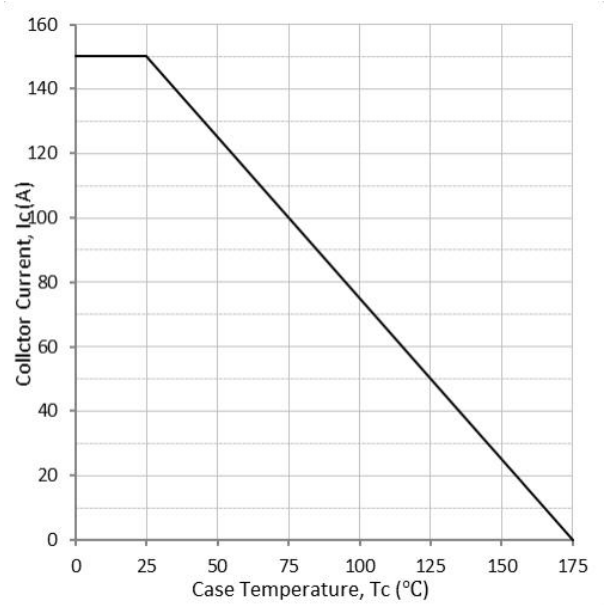


Fig 3.Collector current as a function of case temperature(V_{GE}≥15V,T_{vj}≤175℃)

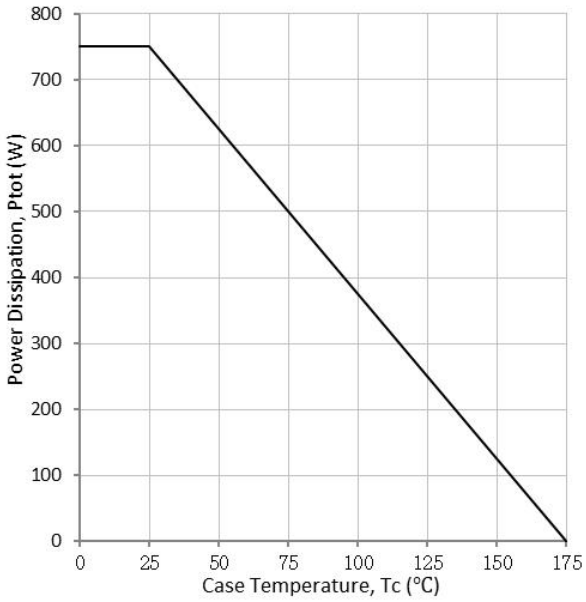


Fig 4.Power dissipation as a function of case temperature(T_{vj}≤175℃)

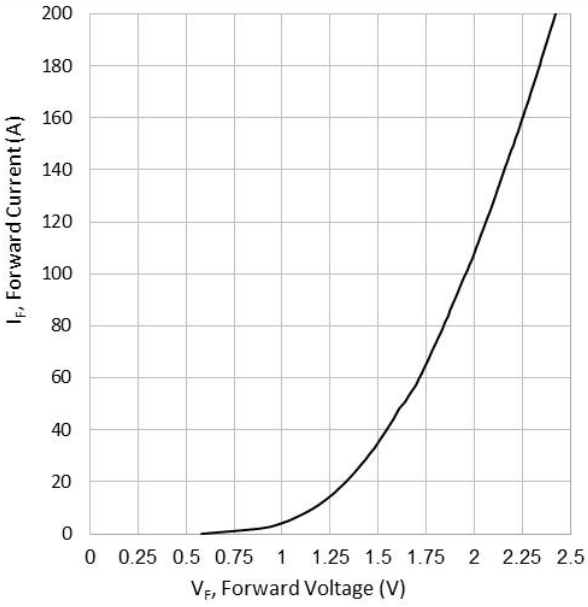


Fig 5.Typical diode forward current vs. forward voltage

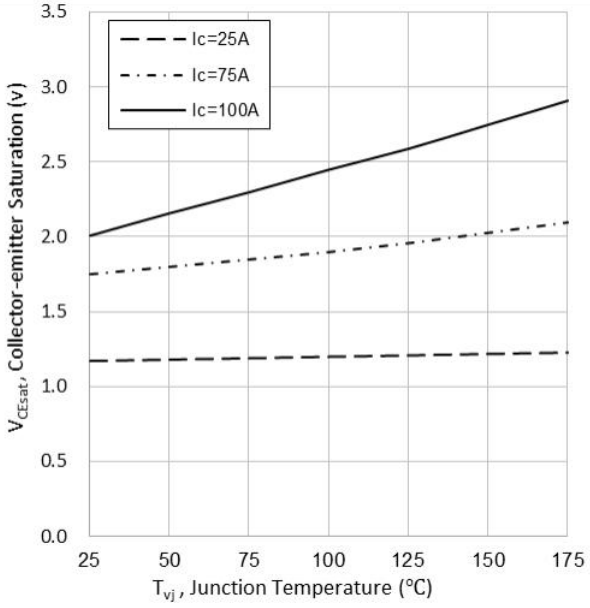


Fig. 6 Typical collector-emitter saturation voltage as a function of junction temperature(V_{GE}=15V)

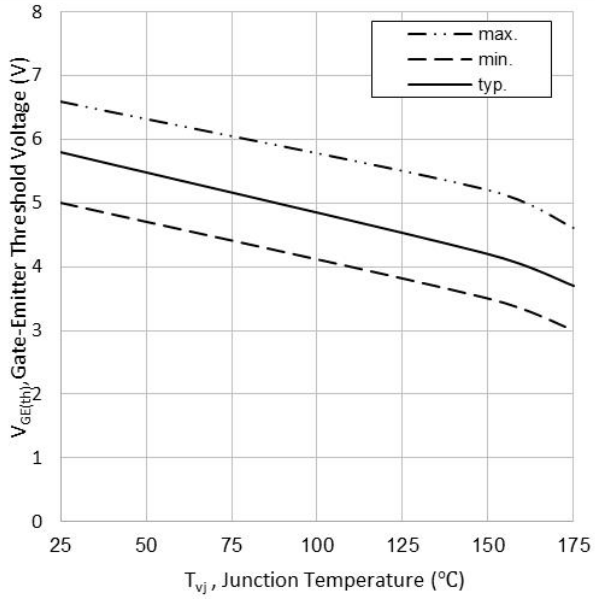


Fig 7.Gate-emitter threshold voltage as a function of junction temperature(I_C=2.4mA)

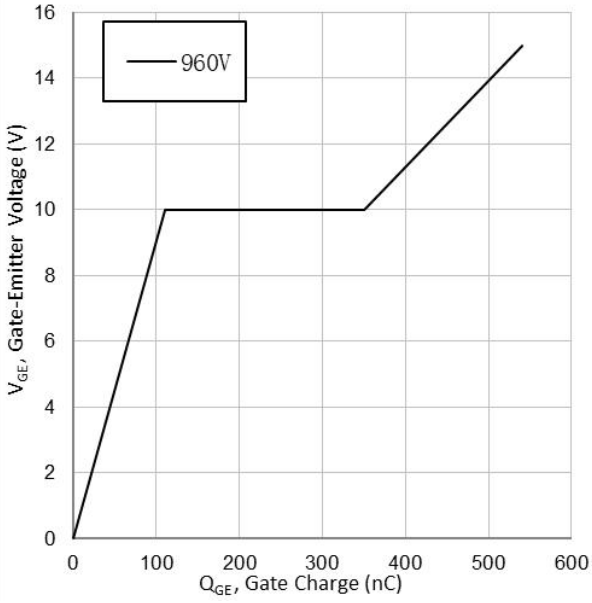


Fig 8.Typical gate charge

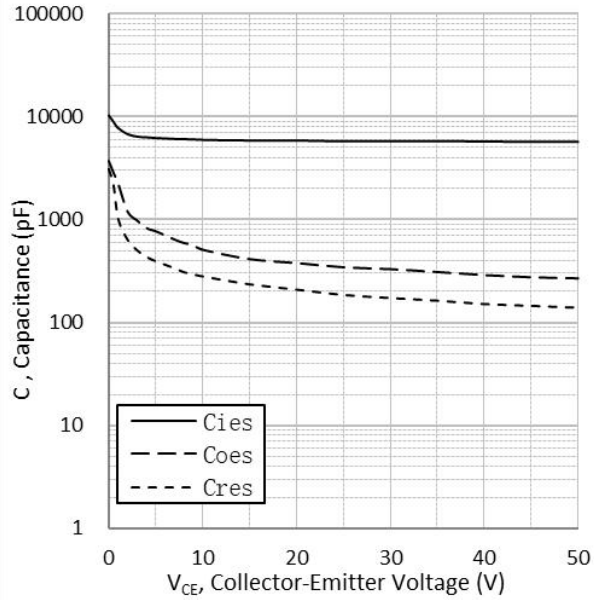


Fig 9.Typical capacitance as a function of collector-emitter voltage(V_{GE}=0V,f=1MHz)

Package Outlines (Unit：mm)

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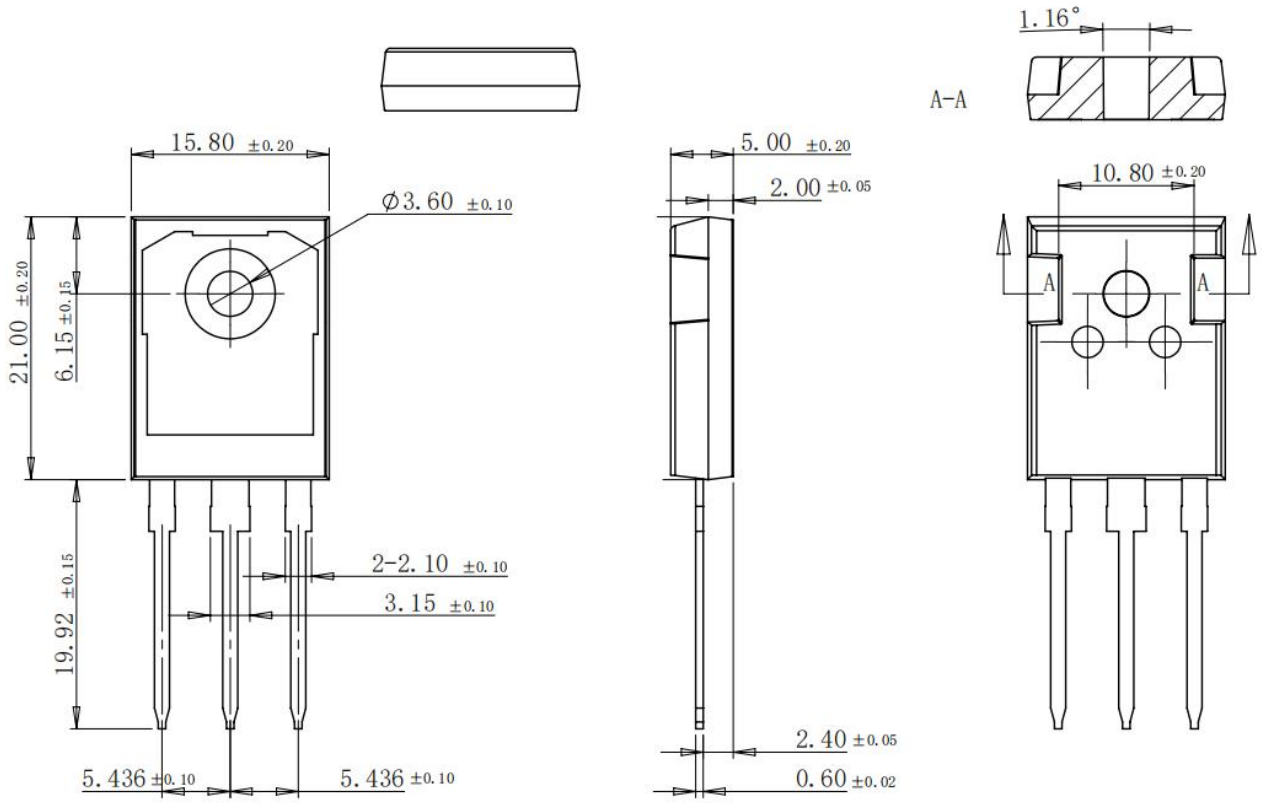

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