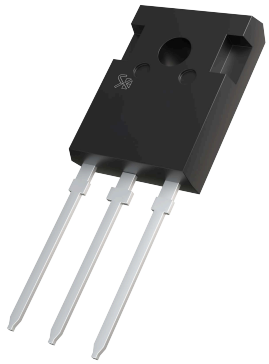
SKIR15N120-T7

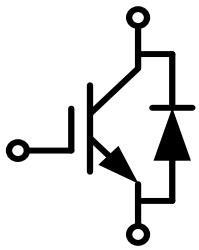
Type	V_{CE}	I_C	V_{CEsat}, T_{vj}=25°C	T_{vjmax}	Package
SKIR15N120-T7	1200V	20A	2.4V	150°C	TO-247

IGBT Discrete with Anti-Parallel Diode

Description

IGBT as power MOSFET input impedance is high, the control power is small, easy to drive, control the characteristics of simple, low and bipolar transistor current, flux current is big, the obvious advantages of low loss. In advocate energy conservation and emissions reduction, low carbon economy era, has the energy saving efficiency is high, the advantages of convenient for large-scale production of IGBT has become a mainstream technology in the development of power semiconductor market.





V_{CES} =2.4V，I_C=20A

Features

- Using the FS technology
- VCE(sat) = 2.4V @ Ic=20A
- tf = 150ns
- High input impedance
- Best thermal stability

Ordering Information

Part Number	Package
SKIR15N120-T7	TO-247

Maximum Ratings

Ratings at 25℃ ambient temperature unless otherwise specified

Parameter	Symbol	Value	Unit
Collector-Emitter voltage	V_{CE}	1200	V
Continuous DC collector current	I_C	20	A
Pulse collector current	I_{Cpuls}	55	A
Power Dissipation TC=25℃	P_D	200	W
Gate-Emitter voltage	V_{GE}	±30	V
Operating junction temperature range	T_J	-55 to +150	℃
Storage junction temperature range	T_{STG}	-55 to +150	℃

Electrical Characteristic

Ratings at 25℃ ambient temperature unless otherwise specified

Parameter	Conditions	Symbol	Value			Unit
			Min.	Typ.	Max.	
Collector-Emitter breakdown voltage	V_{GE}=0V, I_C=1000μA	$V_{(BR)CES}$	1200			V
Gate-Emitter threshold voltage	VGE= VCE, I_C=600μA	$V_{GE(th)}$	3.0	5.0	6.0	V
Collector-emitter saturation voltage	V_{GE}=15V, I_C=20A	$V_{CE(sat)}$		2.4		V
Transconductance	V_{CE}=40V， I_C=20A	G_{fs}		10		S
Input capacitance	f=1 MHz, V_{CE}=25 V, V_{GE}=0 V	C_{iss}		1250		pF
Output capacitance		C_{oss}		100		
Reverse transfer capacitance		C_{rss}		65		
Collector-emitter cut-off current	V_{CE}=1200V , V_{GE}= 0 V	I_{CES}			500	μA
Gate-emitter leakage current	V_{CE}=0 V, V_{GE}= 20 V	I_{GSS}			100	nA
Turn-on delay time	I_C=20A,V_{CC}=800V R_G=33Ω(inductive load)	$t_{d\ on}$		18 24	46 48	ns
Rise time	I_C=20A,V_{CC}=800V R_G=33Ω(inductive load)	t_r		28 30	36 38	
Turn-off delay time	I_C=20A,V_{CC}=800V R_G=33Ω(inductive load)	$t_{d\ off}$		150 150	300 300	
Fall time	I_C=20A,V_{CC}=800V R_G=33Ω(inductive load)	t_f		150 150	260 260	
Turn-on energy loss per pulse	I_C=20A,V_{CC}=800V R_G=33Ω(inductive load)	E_{on}		0.83 1.50	1.40 2.20	mJ
Turn-off energy loss per pulse	I_C=20A,V_{CC}=800V R_G=33Ω(inductive load)	E_{off}		0.91 1.05	1.20 1.90	
Diode forward voltage drop	IF=20A	V_{FM}		1.5	2.7	V
Diode reverse recovery time	IF=20A dI/dt=200A/ us	trr		210	330	ns
Diode peak reverse recovery current		Irr		27	40	A
Diode reverse recovery charge		Qrr		2830	6650	nC

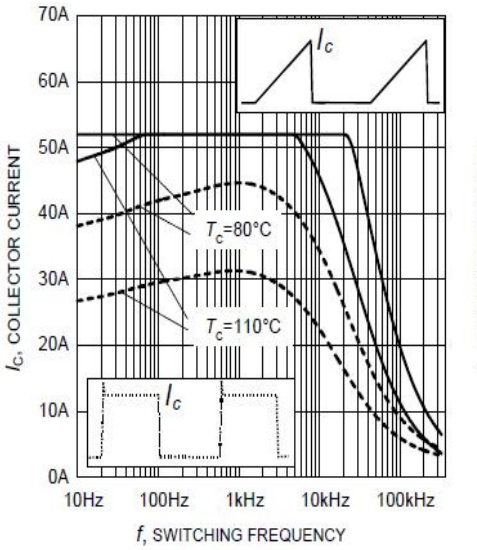


Figure 1. Collector current as a function of switching frequency

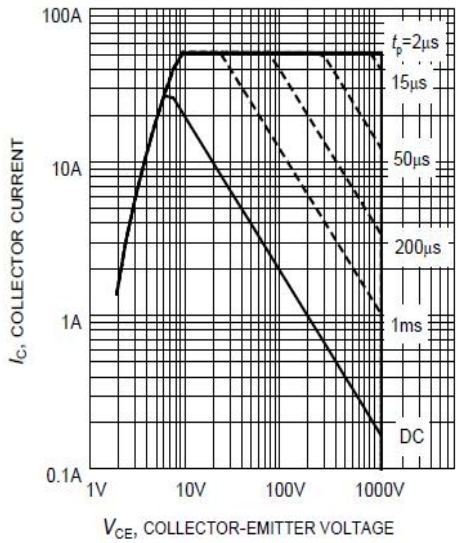


Figure 2. Forward bias safe operating area

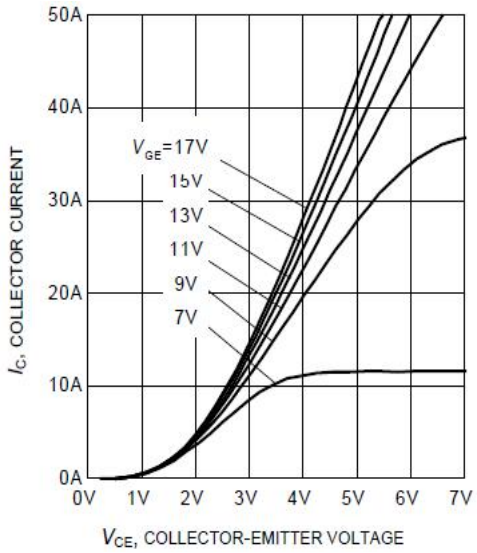


Figure 3. Typical output characteristic（TC=25℃）

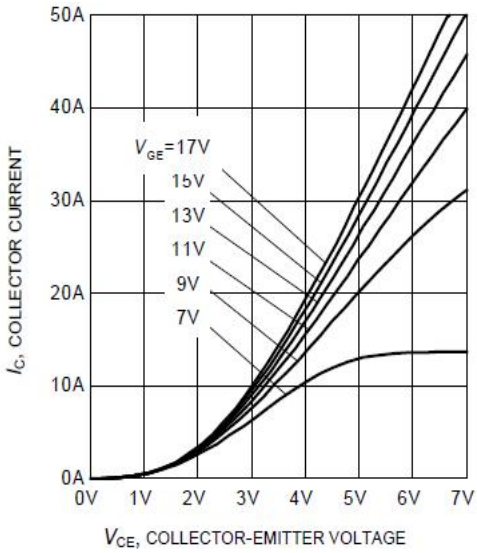


Figure 4. Typical output characteristic（TC=175℃）

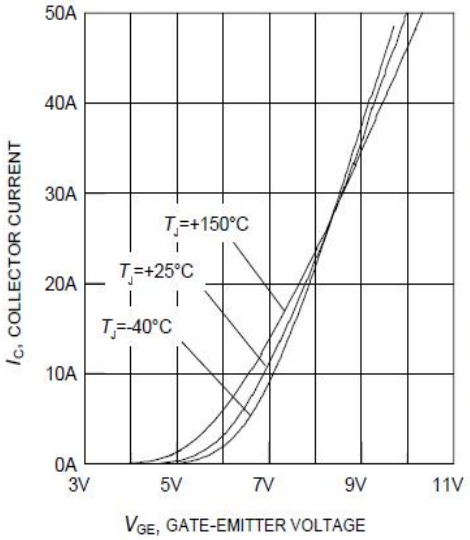


Figure 5. Typical transfer characteristic

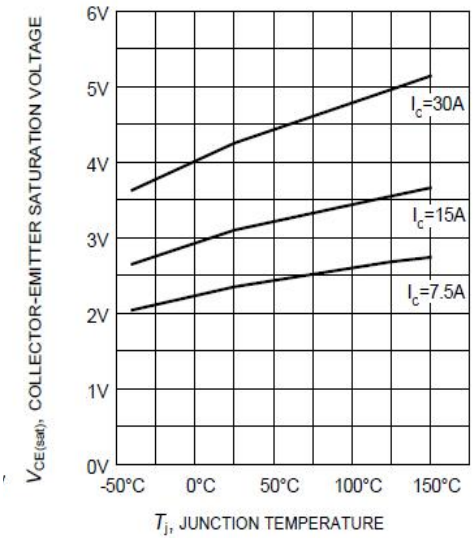


Figure 6. Typical collector-emitter saturation voltage as a function of junction temperature

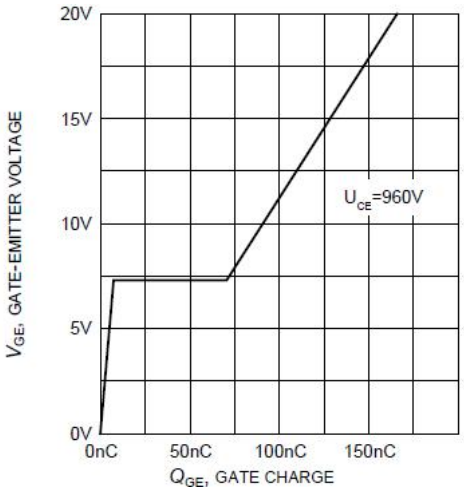


Figure 7. Typical gate charge(IC=15A)

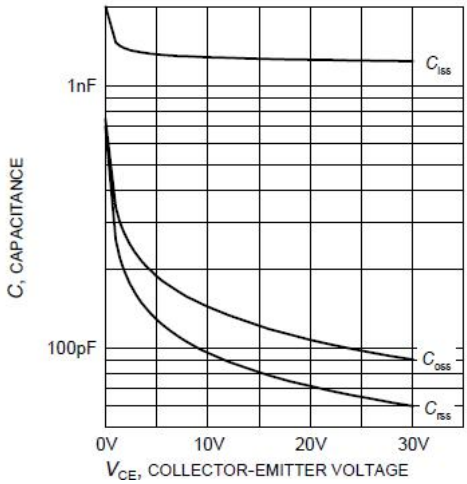


Figure 8. Typical capacitance as a function of collector-emitter voltage
（VGE=0V f=1MHZ）

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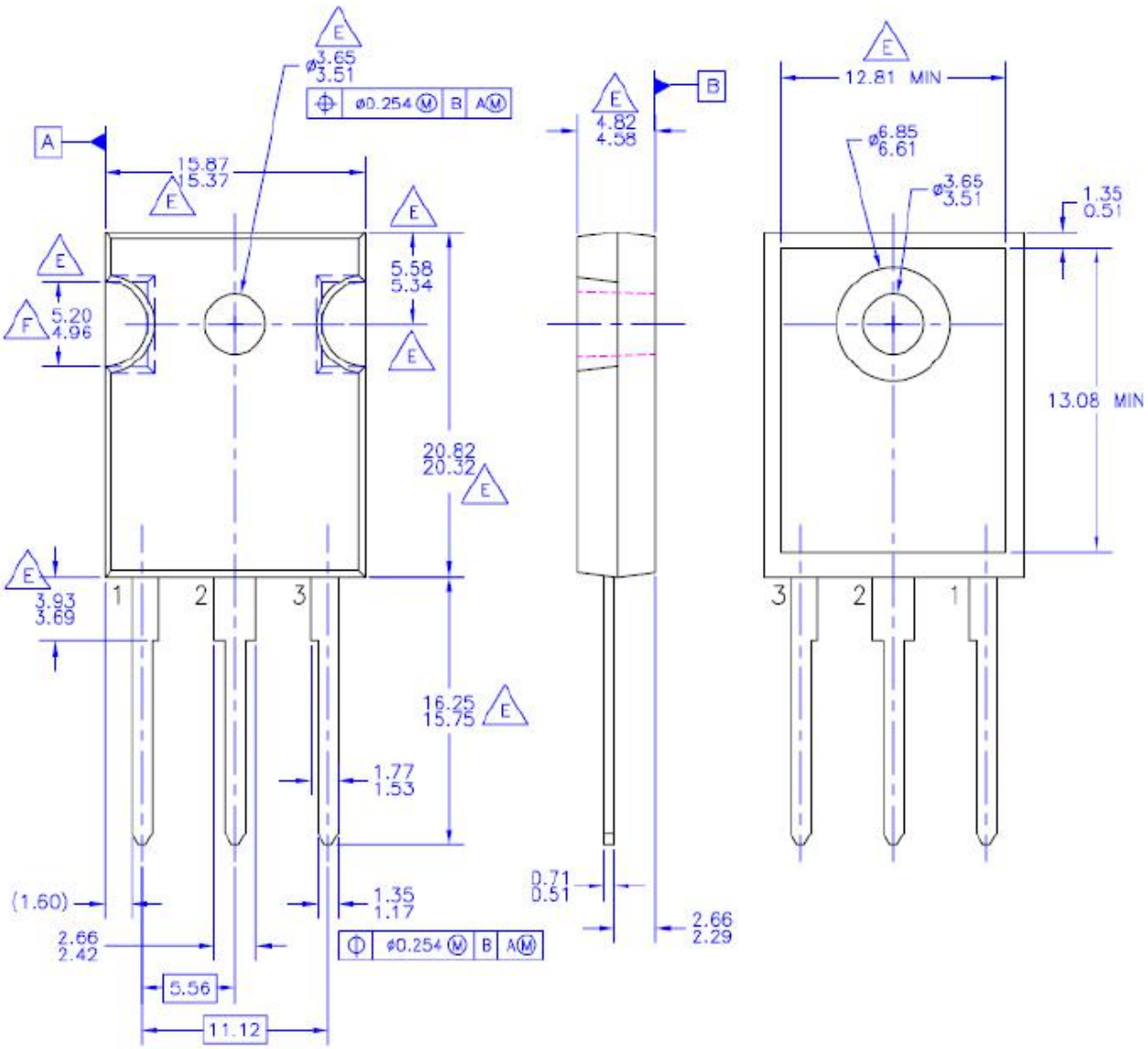
A
B
E
F
15.87
15.37
5.58
5.34
5.20
4.96
20.82
20.32
3.93
3.69
16.25
15.75
1.77
1.53
1.35
1.17
(1.60)
2.66
2.42
5.56
11.12
ø3.65
3.51
ø0.254 M B A M
4.82
4.58
0.71
0.51
2.66
2.29
12.81 MIN
ø6.85
6.61
13.08 MIN
1
2
3