



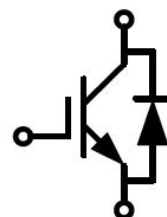
SKIF75N120-T7

IGBT Discrete with Anti-Parallel Diode

Type	V_{CE}	I_C	$V_{CEsat}, T_{vj}=25^{\circ}C$	T_{vjmax}	Package
SKIF75N120-T7	1200V	75A	2.11V	150°C	TO-247

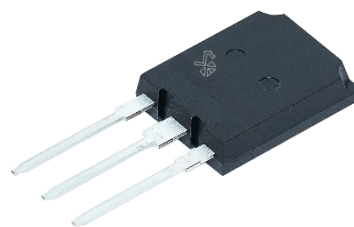
FEATURES

- 1200V groove gate/terminate the process
- Low switching loss
- Positive temperature coefficient



Applications

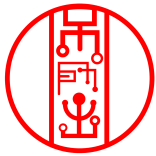
- Solar Inverter
- Welding Machine
- UPS



$V_{CES} = 1200V, I_{C\ nom} = 75A$

Maximum Ratings

Parameter	Conditions	Symbol	Value	Unit
Collector-Emitter voltage	$T_{vj}=25^{\circ}C$	V_{CE}	1200	V
Gate to Emitter Voltage		V_{GE}	± 20	V
Transient Gate to Emitter Voltage			± 30	V
collector current	$T_c=25^{\circ}C$ $T_c=100^{\circ}C$	I_C	150 75	A
Pulsed Collector Current	Pulse width limited by max junction temperature	I_{pulse}	300	A
Diode Forward Current	$T_c=25^{\circ}C$ $T_c=100^{\circ}C$	I_F	150 75	
Operating Junction Temperature		T_J	-55 to +175	°C
Storage Temperature Range		T_{stg}	-55 to +150	°C
Thermal resistance junction - ambient		$R_{th(j-a)}$	40	K/W



IGBT Characteristic

Parameter	Conditions	Symbol	Value			Unit
			Min.	Typ.	Max.	
Static Characteristic						
Collector-emitter breakdown voltage	V _{GE} = 0V, I _C = 0.25mA	V _{(BR)CES}	1200			V
Collector-Emitter saturation voltage	V _{GE} =15V, I _C =75A V _{GE} =15V, I _C =75A	T _{vj} =25°C T _{vj} =175°C	V _{CESat}		2.11 3.03	2.60 V
Gate-Emitter threshold voltage	I _C =2.6mA, V _{GE} = V _{CE}	T _{vj} =25°C	V _{GE(th)}	5.0	5.6	6.5 V
Transconductance	V _{CE} =20V, I _C =75A	G _{fs}		98.8		S
Collector-emitter cut-off current	V _{CE} =1200V , V _{GE} = 0 V	T _{vj} =25°C	I _{CES}			1 mA
Gate-emitter leakage current	V _{CE} =0 V, V _{GE} = 20 V	T _{vj} =25°C	I _{GES}			200 nA
Dynamic Characteristic						
Input capacitance	f=1 MHz, V _{CE} =25 V, V _{GE} =0 V	T _{vj} =25°C	C _{ies}		7.72	nF
Output capacitance			C _{oes}		0.28	
Reverse transfer capacitance			C _{res}		0.13	
Switching Characteristic						
Turn-on delay time	I _C =75A, V _{CE} =600 V V _{GE} =±15 V, R _G =10Ω (inductive load)	T _{vj} =25°C	t _{d on}		51	ns
Rise time			t _r		193	
Turn-off delay time			t _{d off}		180	
Fall time			t _f		98	
Turn-on energy loss per pulse			E _{on}		9.5	mJ
Turn-off energy loss per pulse			E _{off}		2.7	
Total switching energy			E _{tot}		12.2	
Turn-on delay time	I _C =75A, V _{CE} =600 V V _{GE} =±15 V, R _G =10Ω	T _{vj} =175°C	td _{on}		40	mJ

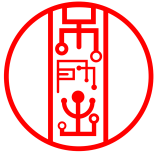


SKIF75N120-T7

Rise time	(inductive load)	t_r		171		
Turn-off delay time		t_{doff}		202		
Fall time		t_f		119		
Turn-on energy loss per pulse		E_{on}		14.6		
Turn-off energy loss per pulse		E_{off}		3.5		
Total switching energy		E_{tot}		18.1		
IGBT thermal resistance, junction - case		$R_{th(j-C)}$		0.27		K/W

Diode Characteristic

Parameter	Conditions	Symbol	Value			Unit
			Min.	Typ.	Max.	
Static Characteristic						
Forward voltage	$I_F=75A$ $I_F=75A$ $T_{vj}=25^{\circ}C$ $T_{vj}=175^{\circ}C$	V_F		1.93 1.67	2.40	V
Switching Characteristic						
Peak reverse recovery current	$I_F=75A, -di_F/dt=320A/\mu s$ $V_R=600V, V_{GE}=-15V$ $T_{vj}=25^{\circ}C$	I_{RM}		18		A
Reverse Recovered charge		Q_{rr}		4.21		μC
Reverse Recovery Time		t_{rr}		444		ns
Reverse recovered energy		E_{rec}		1.7		mJ
Peak reverse recovery current	$I_F=75A, -di_F/dt=320A/\mu s$ $V_R=600V, V_{GE}=-15V$ $T_{vj}=175^{\circ}C$	I_{RM}		43		A
Reverse Recovered charge		Q_{rr}		15.36		μC
Reverse Recovery Time		t_{rr}		767		ns
Reverse recovered energy		E_{rec}		6.2		mJ
Diode thermal resistance, junction - case		$R_{th(j-C)}$		0.28		K/W



Typical Characteristic

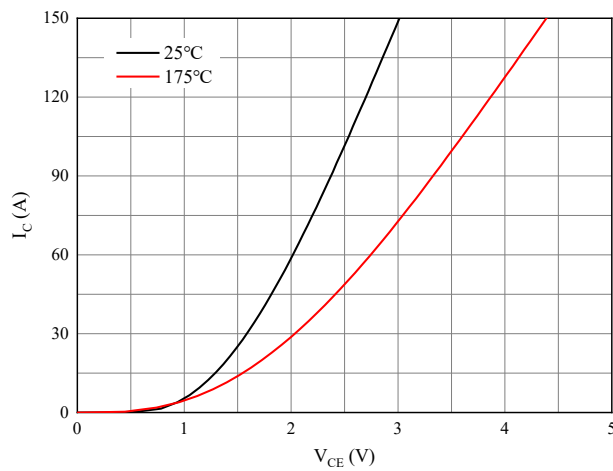


Figure 1. Typical output characteristics ($V_{GE}=15V$)

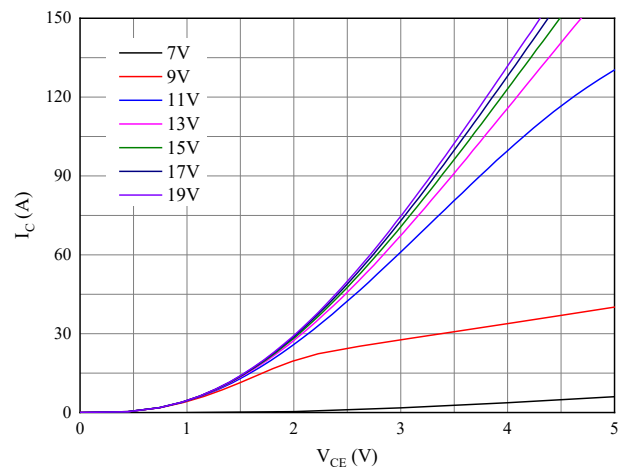


Figure 2. Typical output characteristics ($T_{vj}=175^{\circ}C$)

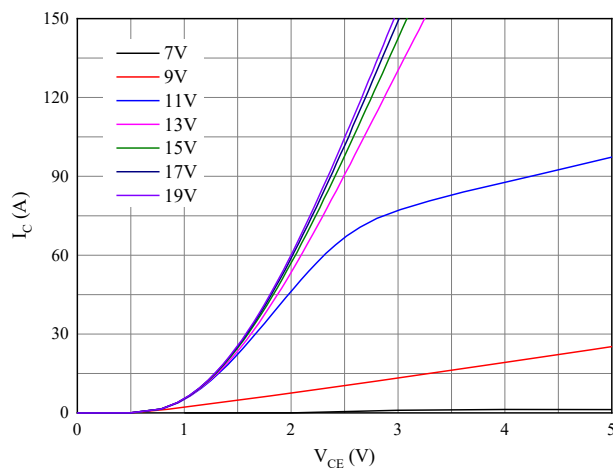


Figure 3. Typical output characteristics ($T_{vj}=25^{\circ}C$)

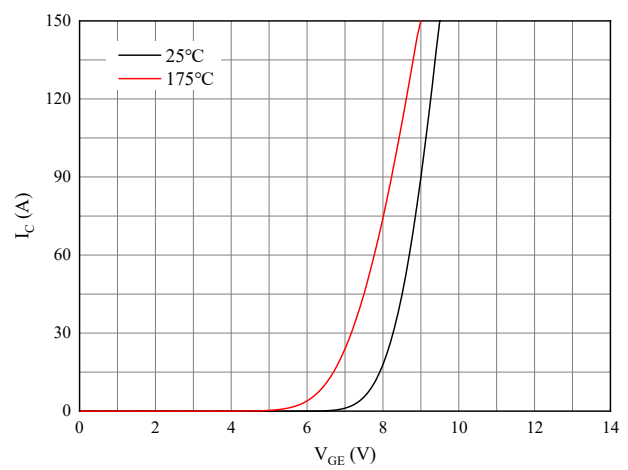


Figure 4. Typical transfer characteristic ($V_{CE}=20V$)

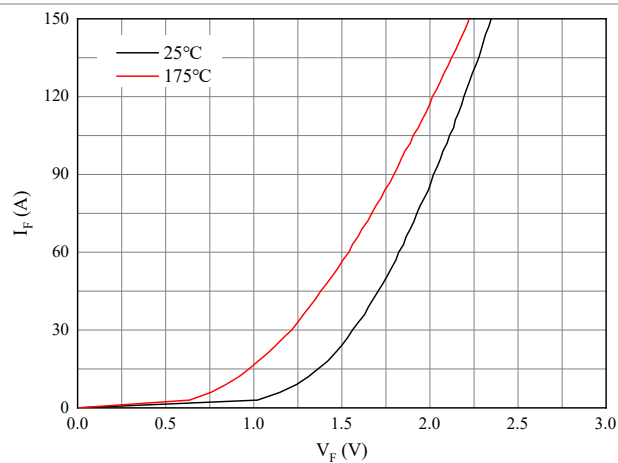


Figure 5. Forward characteristic of Diode

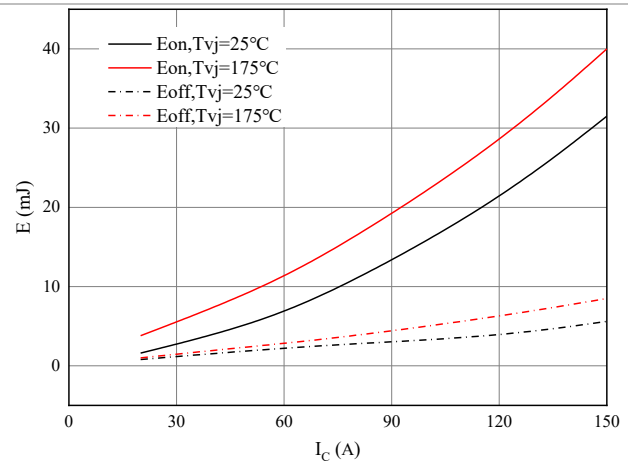


Figure 6. Switching losses of IGBT
 $V_{GE}=\pm 15V$, $R_{Gon}=10\Omega$, $R_{Goff}=10\Omega$, $V_{CE}=600V$

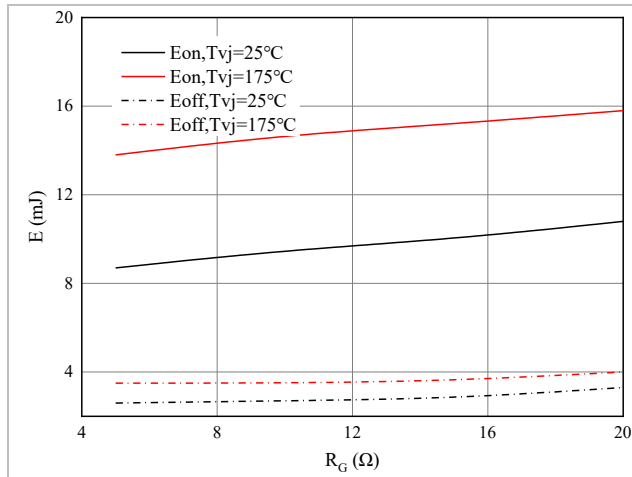


Figure 7. Switching losses of IGBT

$V_{GE} = \pm 15\text{V}$, $I_C = 75\text{A}$, $V_{CE} = 600\text{V}$

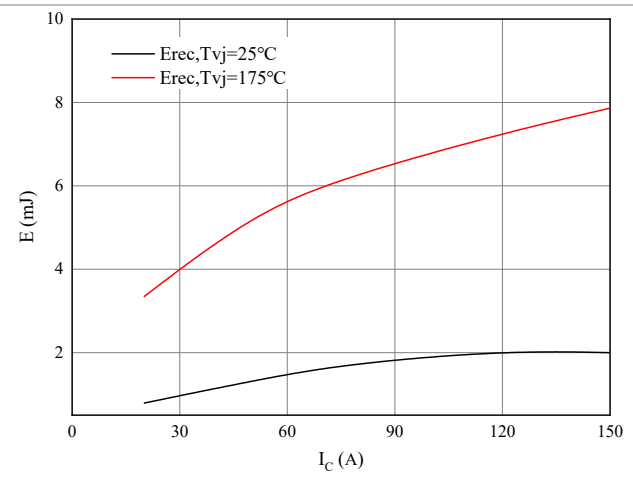


Figure 8. Switching losses of Diode

$R_{gon} = 10\Omega$, $V_{CE} = 600\text{V}$

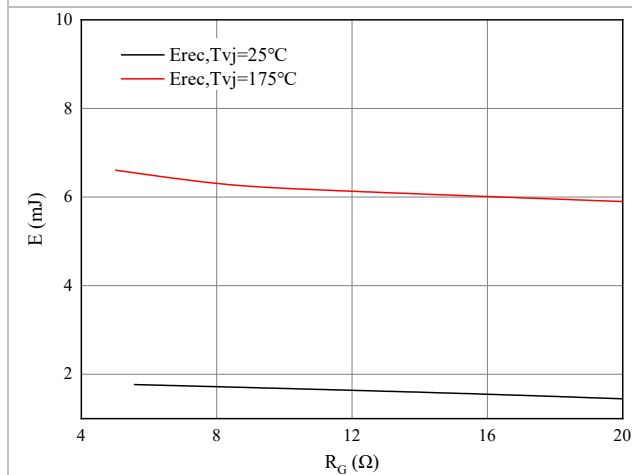


Figure 9. Switching losses of Diode

$I_F = 75\text{A}$, $V_{CE} = 600\text{V}$

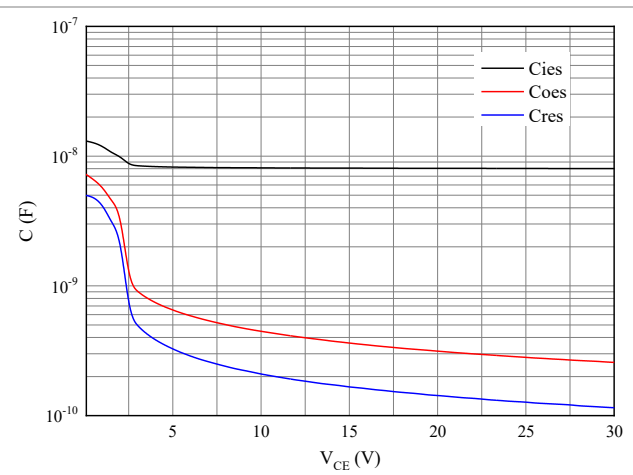


Figure 10. Capacitance characteristic

Package outlines

