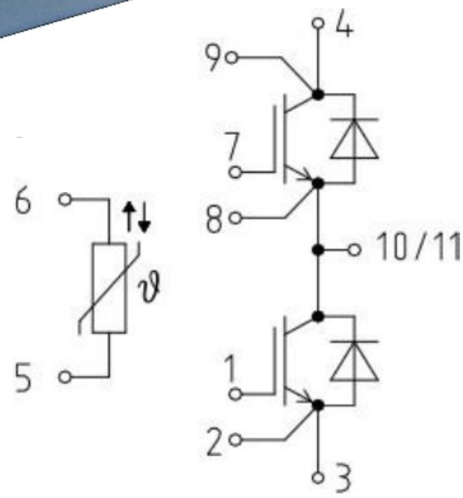
LESK600HF120D9E

1200V/600A 2 in one-package

Features:

- 1200V600A,VCE(sat)(typ.)=2.20V
- Lower losses and higher energy
- Excellent short circuit ruggedness
- Standard Housing



General Applications:

IGBTs offer lower losses and higher energy for application such as motor drive ,inverter and other

Absolute Maximum Ratings of IGBT

V_{CES}	Collector to Emitter Voltage		1200	V
V_{GES}	Continuous Gate to Emitter Voltage		±30	V
I_C	Continuous Collector Current	T_C = 25°C	1000	A
		T_C = 100°C	600	
I_{CM}	Pulse Collector Current	T_J = 150°C	1200	A
P_D	Maximum Power Dissipation (IGBT)	T_C = 25°C, T_J = 150°C	3680	W
t_{sc}	Short Circuit Withstand Time		> 10	μs
T_J	Maximum IGBT Junction Temperature		150	°C
T_{JOP}	Maximum Operating Junction Temperature Range		-40 to +150	°C
T_{stg}	Storage Temperature Range		-40 to +125	°C

Absolute Maximum Ratings of Freewheeling Diode

V_{RRM}	Repetitive Peak Reverse Voltage Preliminary Data		1200	V
I_F	Diode Continuous Forward Current	T_C = 25°C	1200	A
	Diode Continuous Forward Current	T_C = 100°C	600	
I_{FM}	Diode Maximum Forward Current		1200	A

Electrical Characteristics of IGBT at $T_J = 25°C$ (Unless Otherwise Specified)

Parameter		Test Conditions		Min	Typ	Max	Unit
BV_{CES}	Collector to Emitter Breakdown Voltage	$V_{GE} = 0V$, $I_C = 1mA$		1200			V
I_{CES}	Collector to Emitter Leakage Current	$V_{GE} = 0V$, $V_{CE} = V_{CES}$				3	mA
I_{GES}	Gate to Emitter Leakage Current	$V_{GE} = \pm30V$, $V_{CE} = 0V$				400	nA
$V_{GE(th)}$	Gate Threshold Voltage	$I_C = 2.5mA$, $V_{CE} = V_{GE}$		5.0		6.0	V
$V_{CE(sat)}$	Collector to Emitter Saturation Voltage (Module Level)	$I_C = 600A$, $V_{GE} = 15V$	$T_J = 25°C$		2.20	2.40	V
			$T_J = 125°C$		2.40		

Switching Characteristics of IGBT

$t_{d(on)}$	Turn-on Delay Time	$V_{CC} = 600V$ $I_C = 600A$ $R_G = 1.5\Omega$ $V_{GE} = \pm15V$ Inductive Load	$T_J = 25°C$		232		ns
t_r	Turn-on Rise Time		$T_J = 25°C$		240		ns
$t_{d(off)}$	Turn-off Delay Time		$T_J = 25°C$		1210		ns
t_f	Turn-off Fall Time		$T_J = 25°C$		385		ns
E_{on}	Turn-on Switching Loss		$T_J = 25°C$		60.0		mJ
E_{off}	Turn-off Switching Loss		$T_J = 25°C$		128.0		mJ
Q_g	Total Gate Charge		$T_J = 25°C$		5000		nC
R_{gint}	Integrated gate resistor	f = 1M; Vpp = 1V	$T_J = 25°C$		1.6		Ω
C_{ies}	Input Capacitance	$V_{CE} = 25V$ $V_{GE} = 0V$ f = 1MHz	$T_J = 25°C$		42		nF
C_{oes}	Output Capacitance		$T_J = 25°C$		5.0		
C_{res}	Reverse Transfer Capacitance		$T_J = 25°C$		3.2		
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case (IGBT)					0.034	°C/W

Electrical and Switching Characteristics of Freewheeling Diode

V_F	Diode Forward Voltage	I_F = 600A, V_{GE} = 0V	T_J = 25°C		2.20		V
			T_J = 125°C		2.20		
I_{rr}	Diode Peak Reverse Recovery Current	I_F = 600A, di/dt = 5000A/µs, V_{rr} = 600V,	T_J = 25°C		210		A
Q_{rr}	Diode Reverse Recovery Charge		T_J = 25°C		11.1		uC
E_{rec}	Diode Reverse Recovery Energy		T_J = 25°C		11.0		mJ
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case (Diode)					0.07	°C/W

NTC-Thermistor

Characteristic Values

R_{25}	T_C =25°C	5		kΩ
△R/R	T_C =100℃, R_{100} =481Ω		±5	%
P_{25}	T_C =25℃	50		mW
$B_{25/50}$	$R_2=R_{25}\ \exp[B_{25/50}(1/T_2-1/(298.15K))]$	3380		K
$B_{25/80}$	$R_2=R_{25}\ \exp[B_{25/80}(1/T_2-1/(298.15K))]$	3440		K

Module Characteristics

Parameter		Min.	Typ.	Max.	Unit
V_{iso}	Isolation Voltage (All Terminals Shorted),f = 50Hz, 1minute	2500			V
$R_{\theta CS}$	Case-To-Sink(Conductive Grease Applied)		0.1		°C/W
M	Mounting Screw: M6	3.0		6.0	N·m
G	Weight		345		g

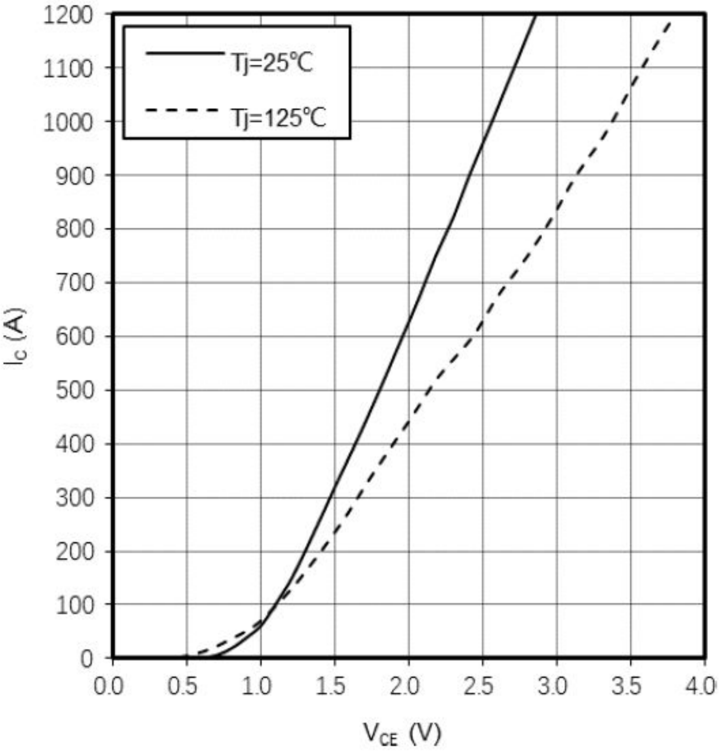


Fig 1. output characteristic IGBT， $I_C=f(V_{CE})$,VGE=15V

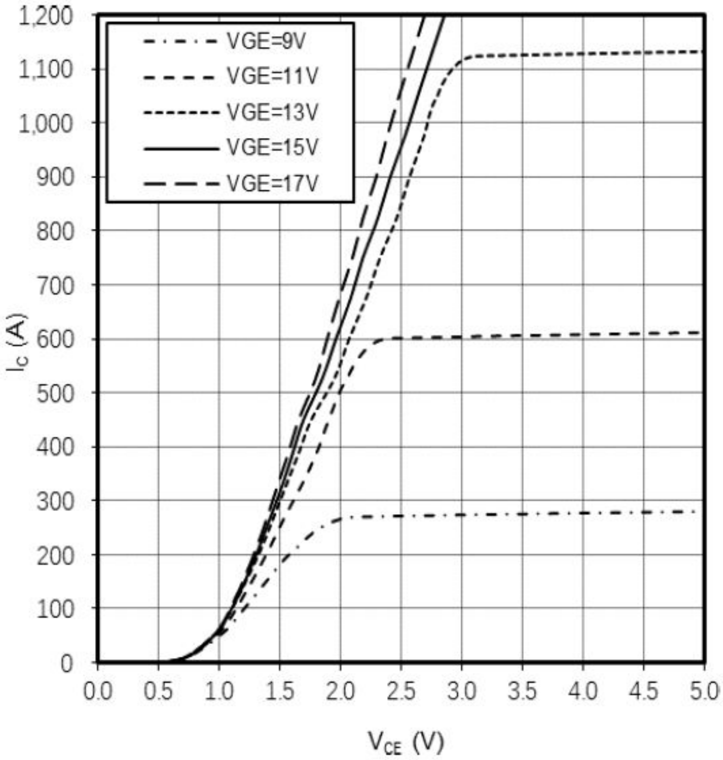


Fig 2. output characteristic IGBT， $I_C=f(V_{CE})$,T_j=125℃

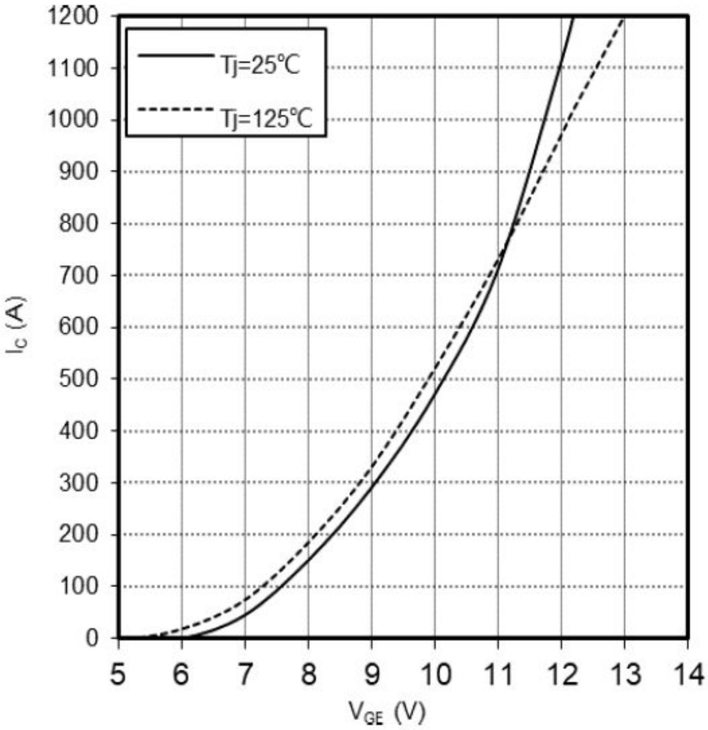


Fig 3. transfer characteristic IGBT， $I_C=f(V_{GE})$,V_{CE}=20V

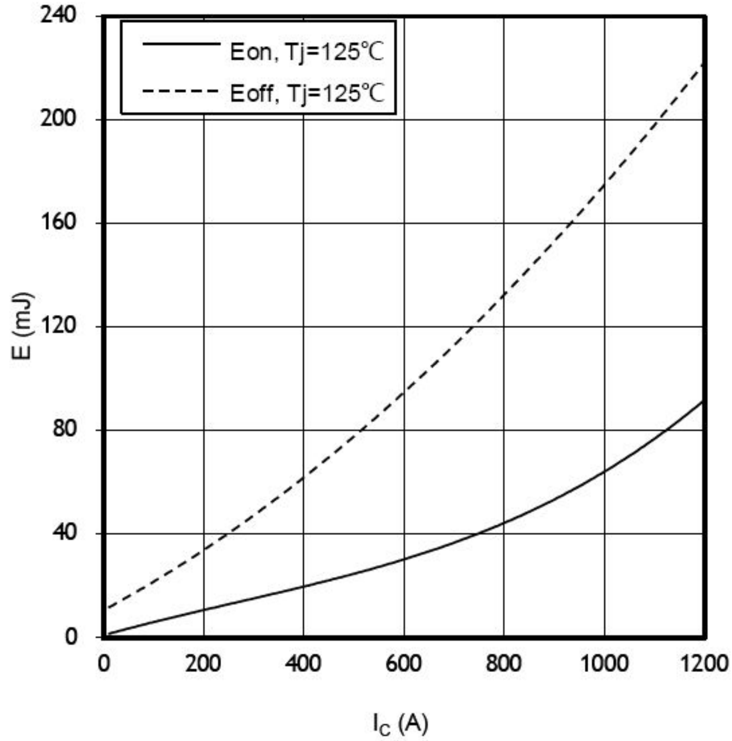


Fig 4. switching losses IGBT, $E_{on}=f(I_c)$,$E_{off}=f(I_c)$,
$V_{GE}=\pm15V$,$R_{Gon}=1.3\ \Omega$,$R_{Goff}=1.3\ \Omega$,V_{CE}=600V

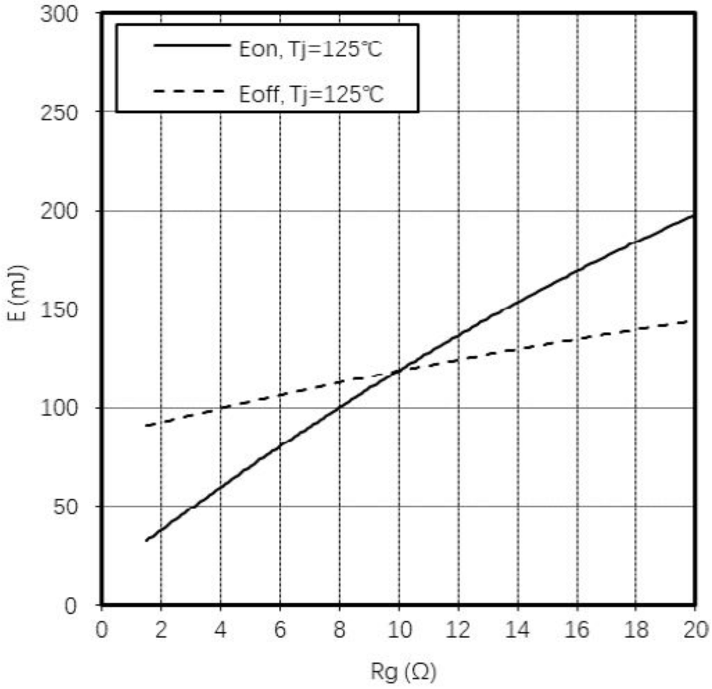


Fig 5. switching losses IGBT, E_{on}=f(R_G),E_{off}=f(R_G),
V_{GE}=±15V,I_C=600A,V_{CE}=600V

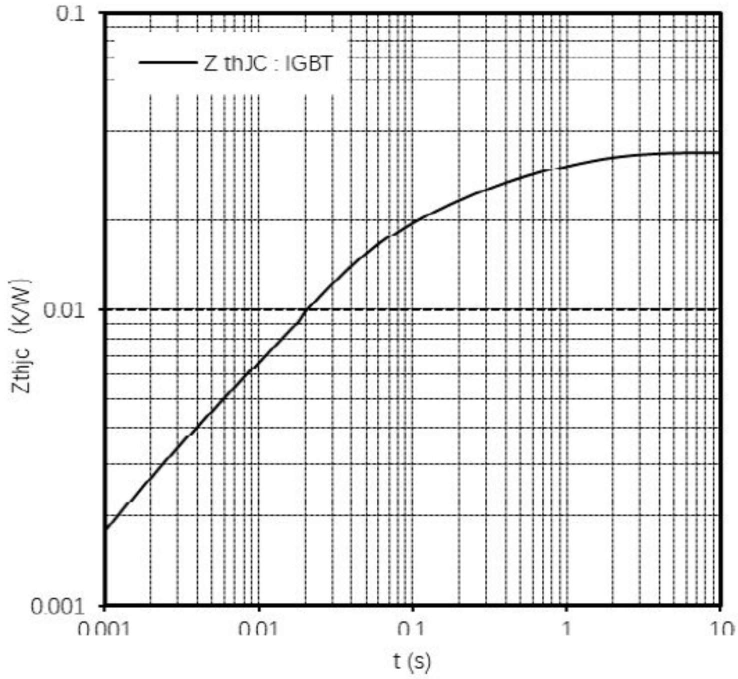


Fig 6. transient thermal impedance IGBT , Zthjc=f(t)

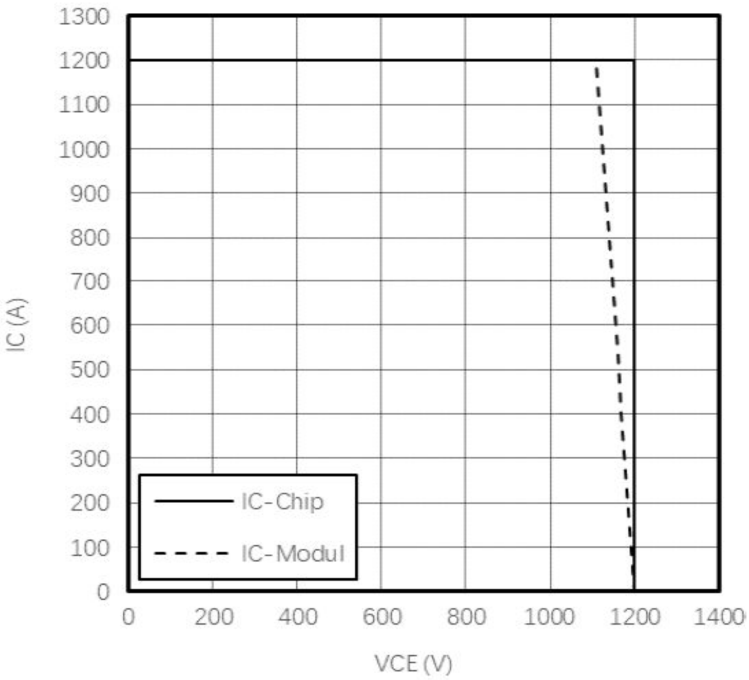


Fig 7. reverse bias safe operating area IGBT, I_C=f(V_{CE}),
V_{GE}=±15V,R_{Goff}=1.3Ω， Tvj=125℃

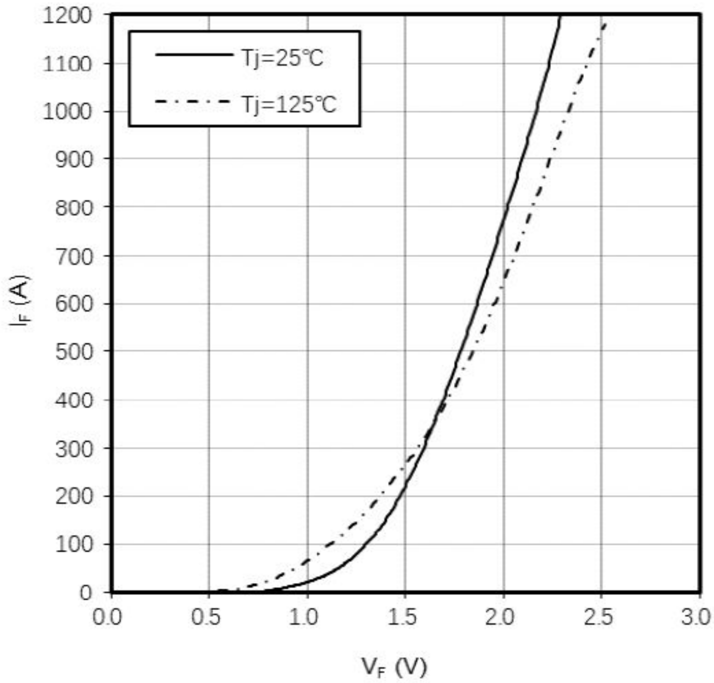


Fig 8. forward characteristic of Diode， I_F=f(V_F)

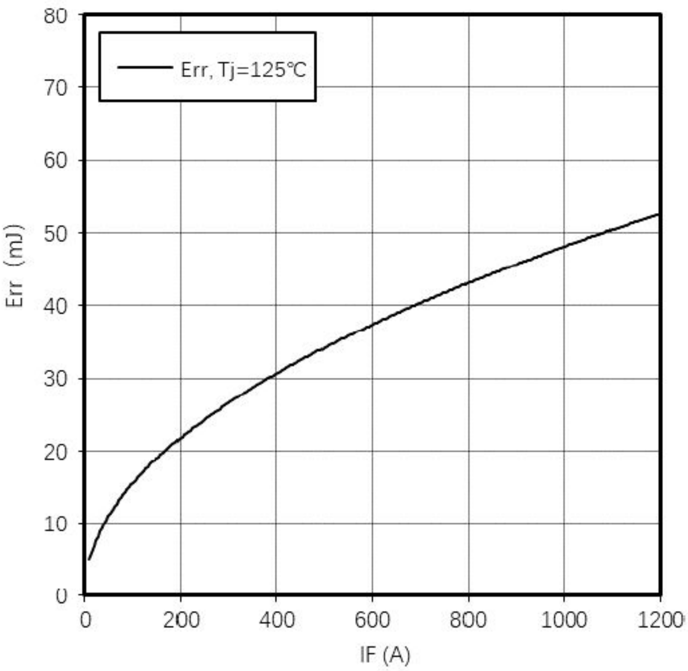


Fig 9. switching losses Diode, $E_{rr}=f(I_F)$, R_{Gon}=1.3 Ω, V_{CE}=600V

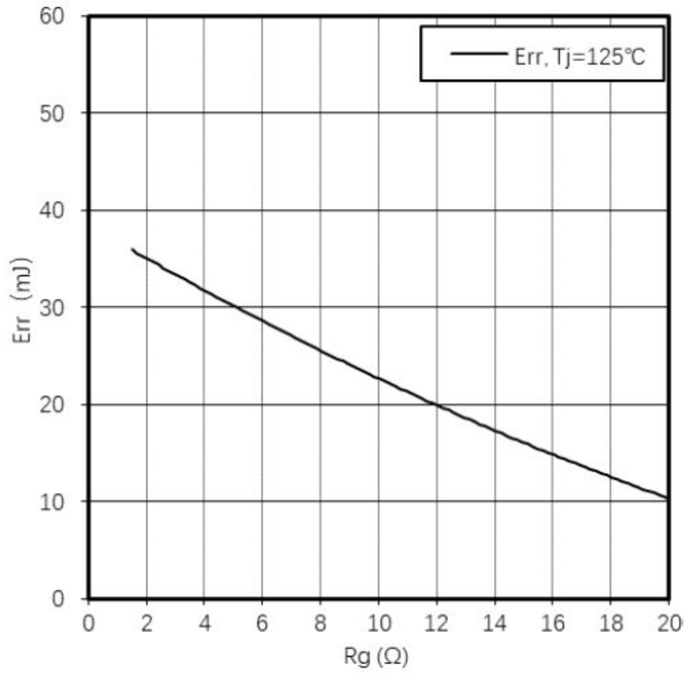


Fig 10. switching losses Diode, $E_{rr}=f(R_G)$, I_F=600A, V_{CE}=600V