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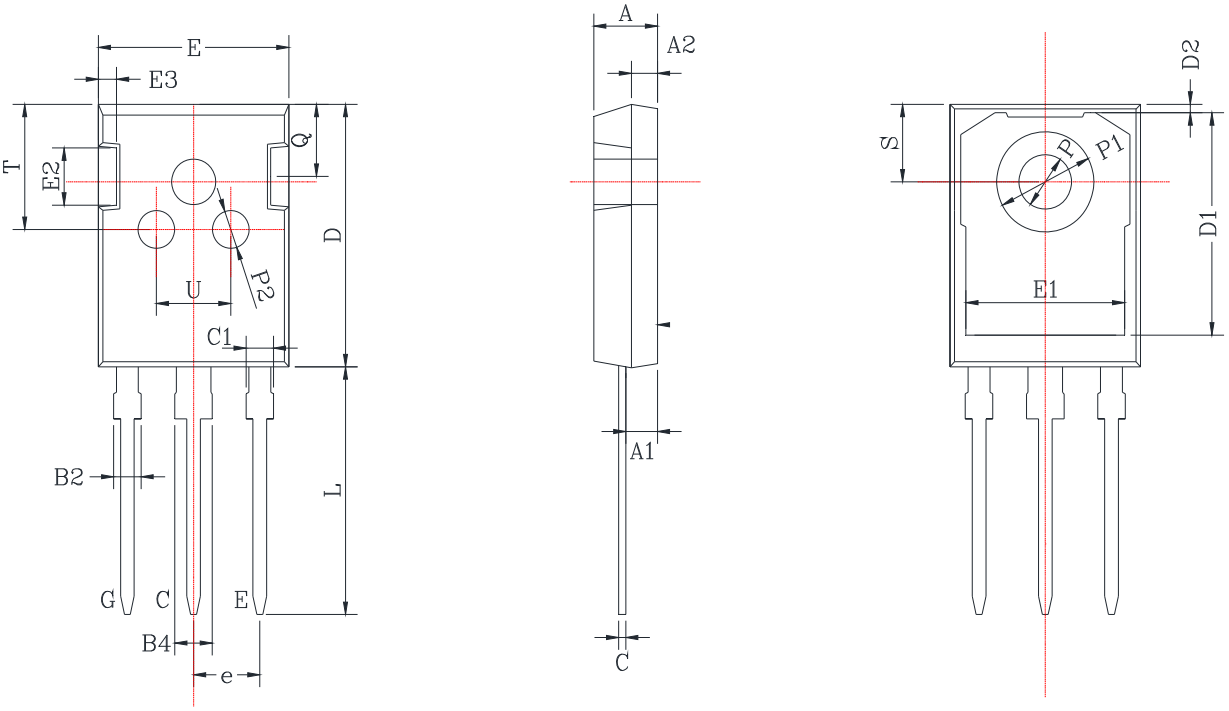
DATA SHEET

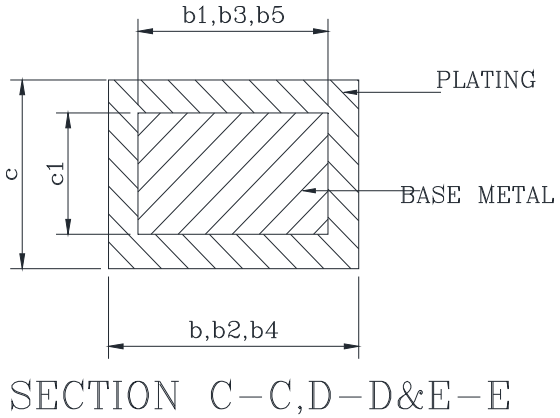
PART NO. : PC25H120AB

REV : A / 0

CUSTOMER'S APPROVAL : _____ DCC : _____

Package Dimensions





SECTION C–C,D–D&E–E

Common dimensions(mm)							
Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	4.85	5.0	5.1	P	3.5	3.6	3.7
A1	2.31	2.41	2.51	P1	7.0	-	7.4
A2	1.9	2.0	2.1	P2	2.4	2.5	2.6
B2	-	-	2.2	Q	5.6	-	6.0
B4	-	-	3.2	S	6.05	6.15	6.25
C	0.6	-	0.66	U	6.0	-	6.4
D1	16.25	16.55	16.85	b1	1.15	1.2	1.22
D2	1.05	1.17	1.35	b2	1.96	-	2.06
E	15.7	15.8	15.9	b3	1.95	2.0	2.02
E1	13.06	13.26	13.46	b4	2.96	-	3.06
E2	4.9	5.0	5.1	b5	2.96	3.0	3.02
E3	2.4	2.5	2.6	c	0.59	-	0.66
e	5.41	5.44	5.47	c1	0.58	0.6	0.62
L	19.8	19.92	20.1	D	20.9	21	21.1
T	9.9	10	10.1				

Trench Field-Stop Technology IGBT

PC25H120AB

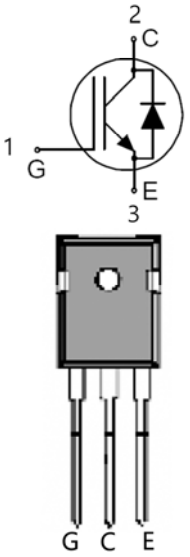
REV:A / 0

Features

1200V, 25A

$V_{CE(sat)(typ.)}$ =2.2V@V_{GE}=15V, I_C=25A

Maximum Junction Temperature 150℃



Applications

IH (induction heating)

UPS

General inverter

Other soft switching applications

Key Performance and Package Parameters

V_{CE}	I_C	V_{CEsat}, T_{vj}=25℃	T_{vjmax}
1200V	25A	2.2V	150℃

Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{CES}	Collector-Emitter Voltage	1200	V
V_{GES}	Gate-Emitter Voltage	± 30	V
I_C	Continuous Collector Current (T_C=25 ℃)	45	A
	Continuous Collector Current (T_C=100℃)	25	A
I_{CM}	Pulsed Collector Current (Note 1)	80	A
I_F	Diode Continuous Forward Current (T_C=100 ℃)	25	A
I_{FM}	Diode Maximum Forward Current (Note 1)	60	A
P_D	Maximum Power Dissipation (T_C=25 ℃)	220	W
	Maximum Power Dissipation (T_C=100℃)	100	W
T_J	Operating Junction Temperature Range	-55 to +150	℃
T_{STG}	Storage Temperature Range	-55 to +150	℃

Thermal Data

Symbol	Parameter	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction to case for IGBT	0.45	℃ / W
$R_{\theta JC}$	Thermal Resistance, Junction to case for Diode	0.85	℃ / W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	40	℃ / W

Electrical Characteristics (Tc=25℃ unless otherwise noted.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{CES}	Collector-Emitter Breakdown Voltage	V_{GE}= 0V, I_C= 250uA	1200	---	---	V
I_{CES}	Collector-Emitter Leakage Current	V_{CE}= 1200V, V_{GE}= 0V	---	---	250	uA
I_{GES}	Gate Leakage Current, Forward	V_{GE}=30V, V_{CE}= 0V	---	---	100	nA
	Gate Leakage Current, Reverse	V_{GE}= -30V, V_{CE}= 0V	---	---	-100	nA
$V_{GE(th)}$	Gate Threshold Voltage	V_{GE}= V_{CE}, I_C= 250uA	4.5	-5.0	5.5	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	V_{GE}=15V, I_C= 25A	---	2.2	2.5	V
Qg	Total Gate Charge	V_{CC}=960V V_{GE}=15V I_C=25A	---	130	---	nC
Qge	Gate-Emitter Charge		---	30	---	nC
Qgc	Gate-Collector Charge		---	70	---	nC
$t_{d(on)}$	Turn-on Delay Time	V_{CC}=600V V_{GE}=15V I_C=25A R_G=10Ω Inductive Load T_C=25 ℃	---	22	---	ns
t_r	Turn-on Rise Time		---	35	---	ns
$t_{d(off)}$	Turn-off Delay Time		---	290	---	ns
t_f	Turn-off Fall Time		---	170	---	ns
Eon	Turn-on Switching Loss		---	2.2	---	mJ
Eoff	Turn-off Switching Loss		---	1.4	---	mJ
Ets	Total Switching Loss		---	3.6	---	mJ
C_{ies}	Input Capacitance	V_{CE}=25V V_{GE}=0V f = 1MHz	---	1250	---	pF
C_{oes}	Output Capacitance		---	210	---	pF
C_{res}	Reverse Transfer Capacitance		---	150	---	pF
R_{Gint}	Integrated gate resistor		---	3.8	---	Ω
SCSOA	Short Circuit Safe Operation Area		10	---	---	uS

Diode Characteristics (TC=25℃ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_F	Diode Forward Voltage	I_F=25A	---	2.3	2.5	V
t_{rr}	Diode Reverse Recovery Time	V_{CE} = 600V I_F= 25A dI_F/dt = 500A/us	---	190	---	ns
I_{rr}	Diode peak Reverse Recovery Current		---	20	---	A
Q_{rr}	Diode Reverse Recovery Charge		---	1600	---	nC

Note1：Repetitive rating, pulse width limited by maximum junction temperature

Typical Performance Characteristics

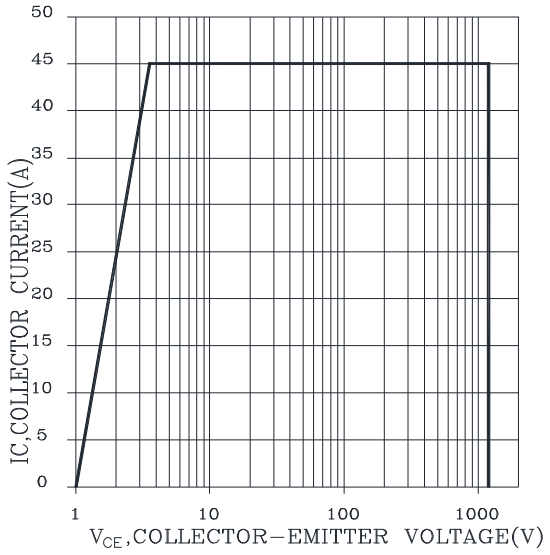


Fig. 1 Forward bias safe operating area (Tj=150℃; V_{GE}=15V)

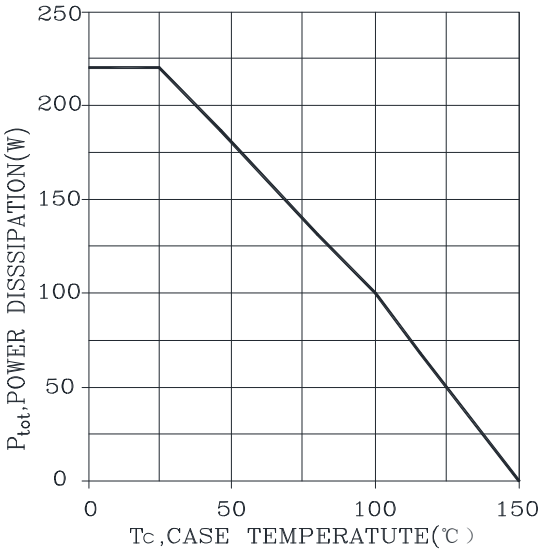


Fig. 2 Power dissipation as a function of case temperature

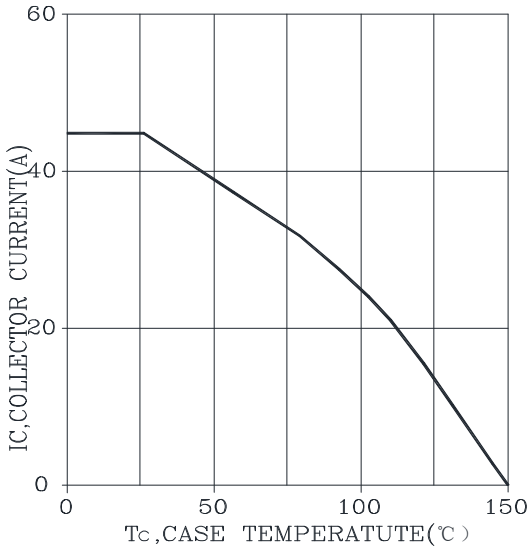


Fig. 3 Collector current as a function of case temperature

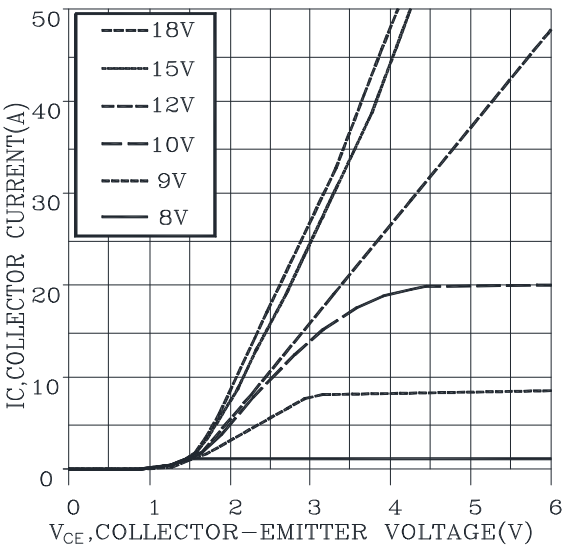


Fig. 4 Typical output characteristic (T_J=25℃; tp=300us)

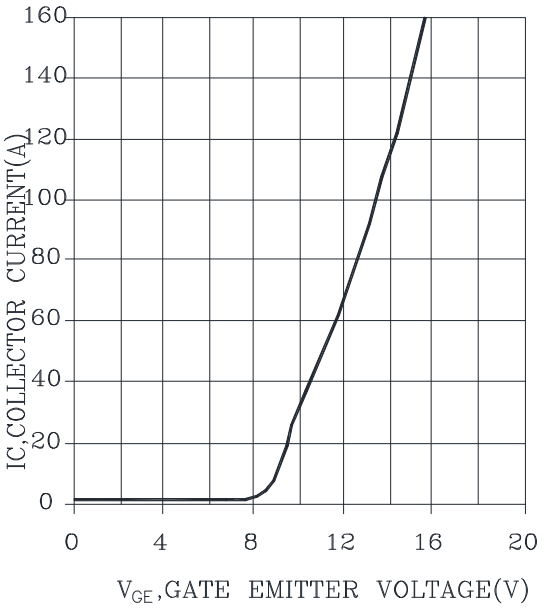


Fig. 5 Typical transfer characteristics (V_{CE}=20V, tp=20us)

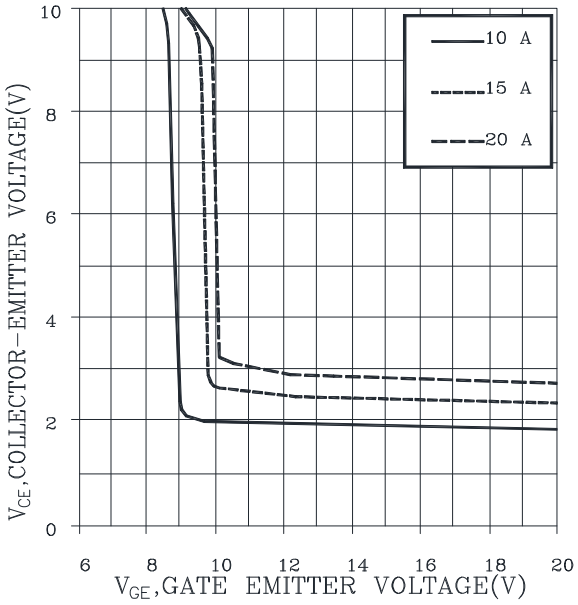


Fig. 6 Typical V_{CE} VS. V_{GE} (T_J=25℃)

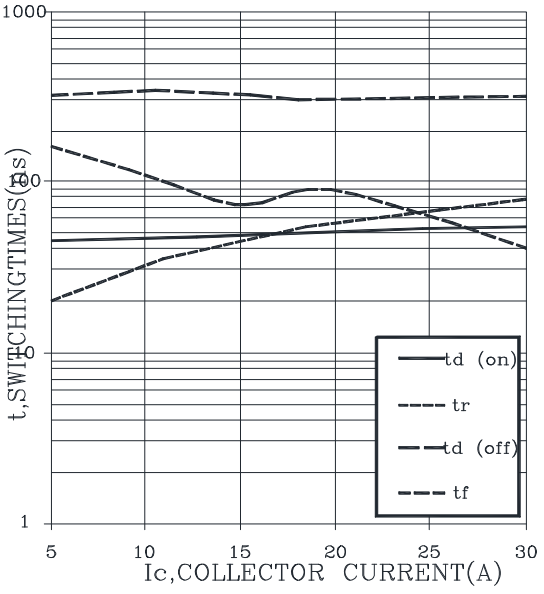


Fig. 7 Typical switching times as a function of collector current (inductive load, T_C=25℃,L=500uH,V_{CE}=600V,V_{GE}=15V,Rg=28Ω)

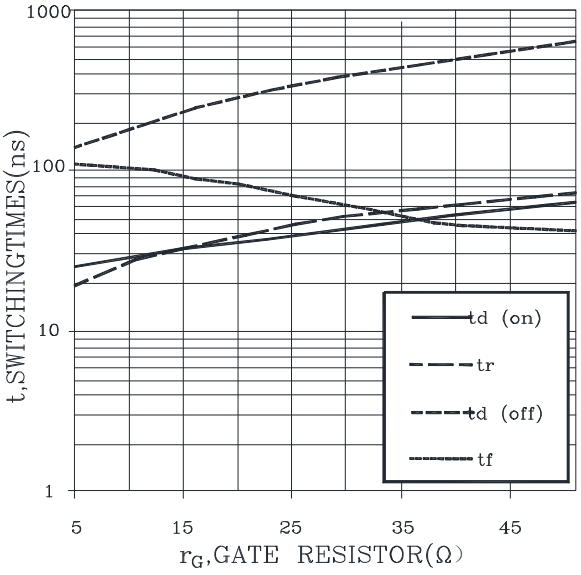


Fig. 8 Typical switching times as a function of gate resistance (inductive load, T_C=25℃, L=500uH, V_{CE}=600V,V_{GE}=15V, I_C=25A)

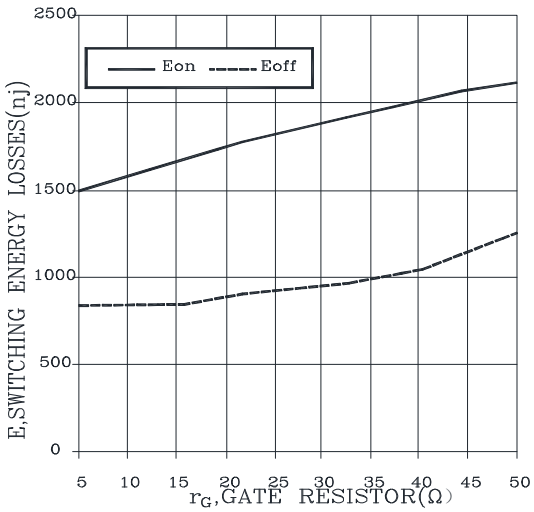


Fig. 9 Typical energy loss VS. Rg, (inductive load, T_C=25℃,L=500uH, V_{CE}=600V, V_{GE}=15V,I_C=25A)

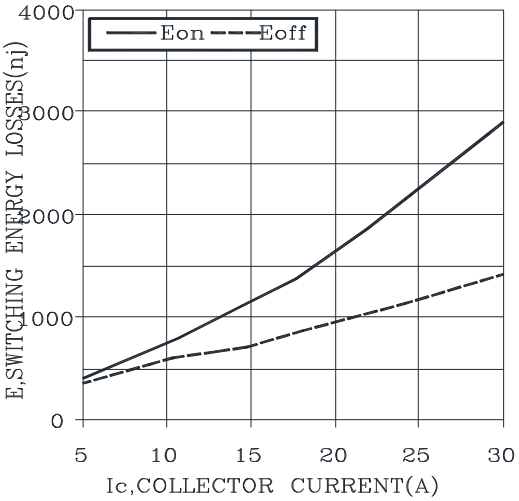


Fig. 10 Typical switching energy losses as a function of collector current (inductive load, T_C=25℃, L=500uH, V_{CE}=600V,V_{GE}=15V,Rg=28Ω)

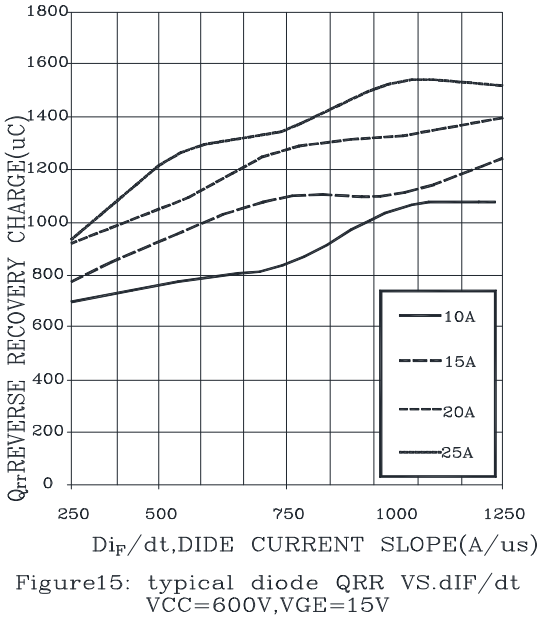


Figure15: typical diode QRR VS.dIF/dt
VCC=600V,VGE=15V

Fig. 11 Typical Diode Qrr VS. dIF/dt (Vcc=600V,V_{GE}=15V)

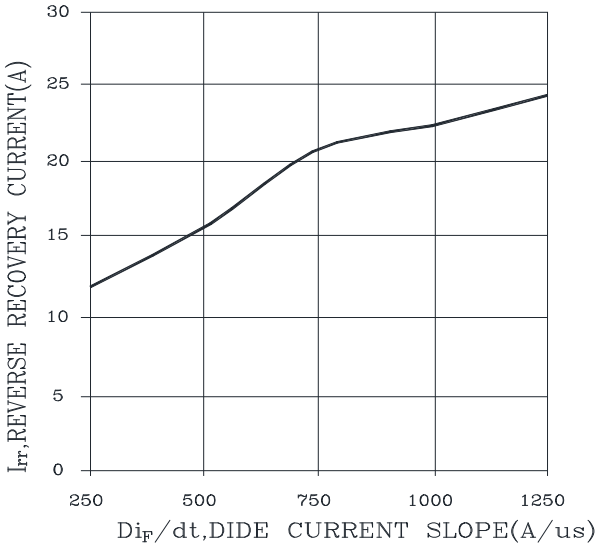


Fig. 12 Typical Diode Irr VS. dIF/dt (Vcc=600V,V_{GE}=15V)

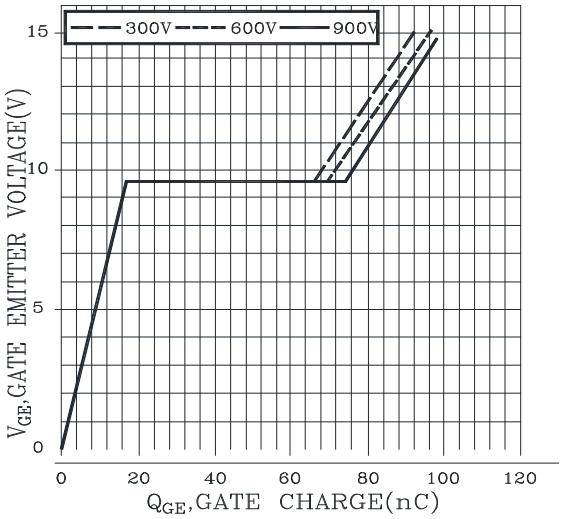


Fig. 13 Typical gate charge (I_C=25A)

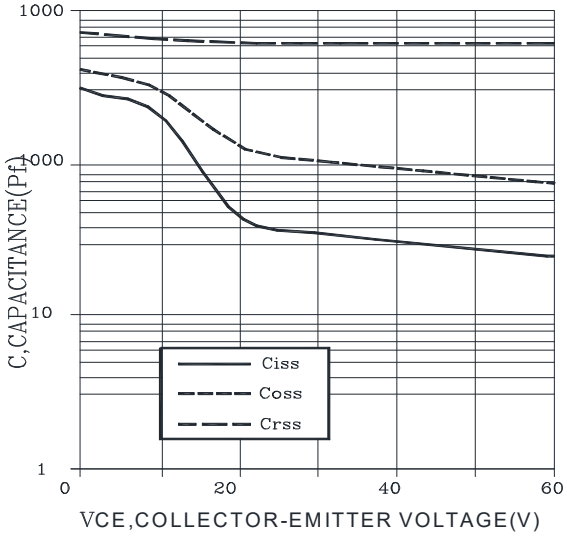


Fig. 14 Typical capacitance as a function of collector-emitter voltage (VGE=0V, f=100kHz)

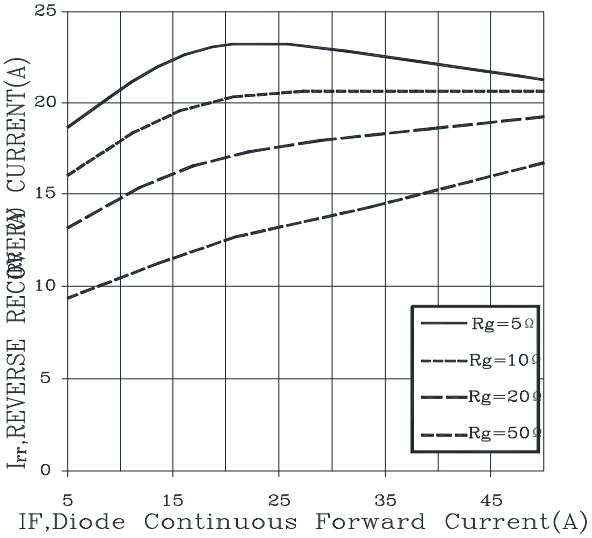


Fig. 15 Typical Diode Irr VS. IF, (T_C=25℃ V_{CC}=600V, V_{GE}=15V)

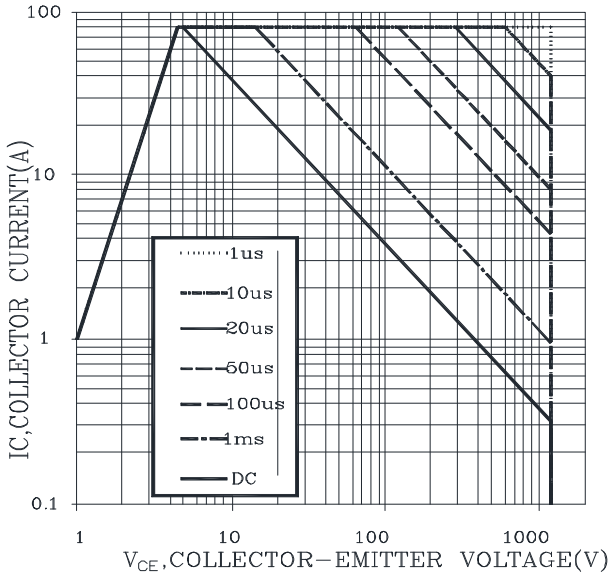


Fig. 16 Forward SOA,T_C=25℃,T_J≤150℃

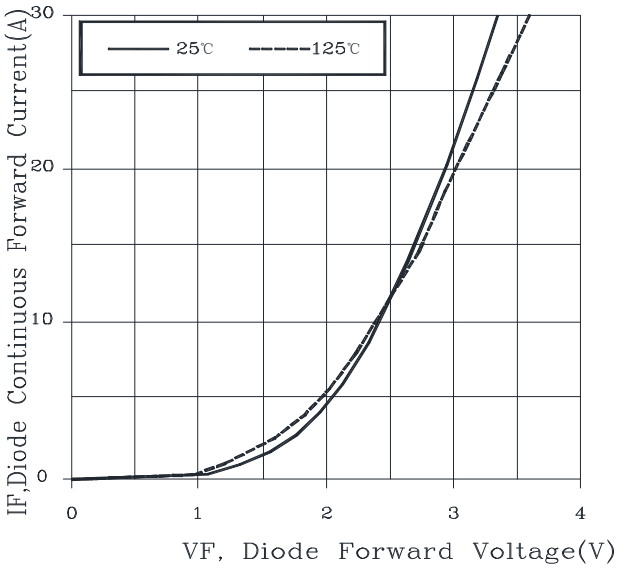


Fig. 17 Typical Diode Forward Characteristic,tp=300us

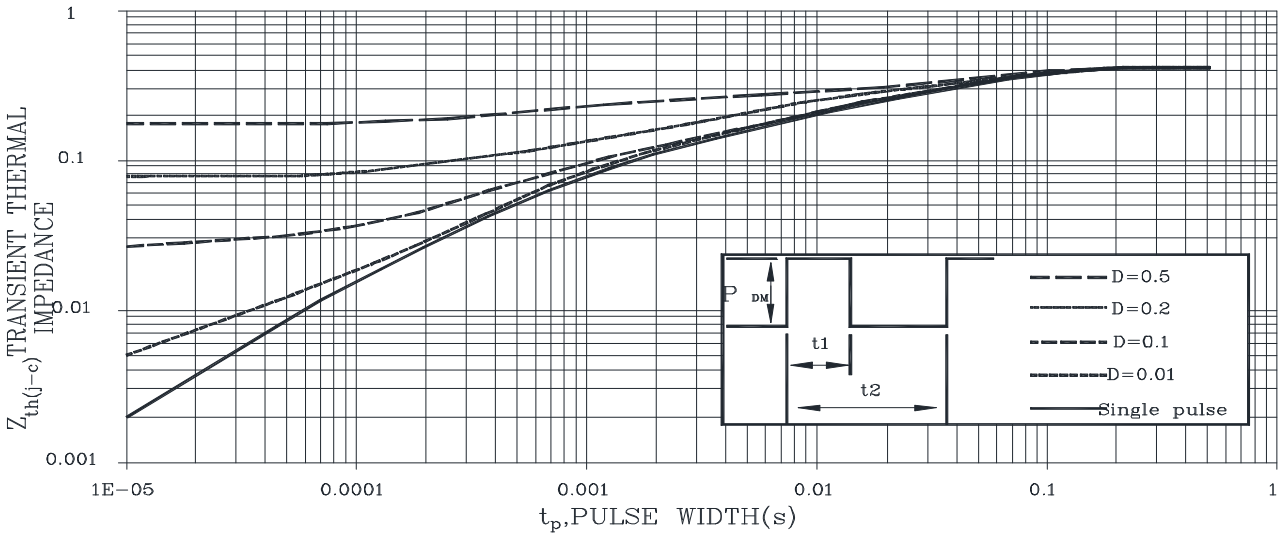


Fig. 18 Normalized Transient Thermal Impedance, Junction-To-Case

Note1.Duty factor D=t1/t2; Note2:peak TJ=PDM×Zthjc+TC

● PART NO. SYSTEM :