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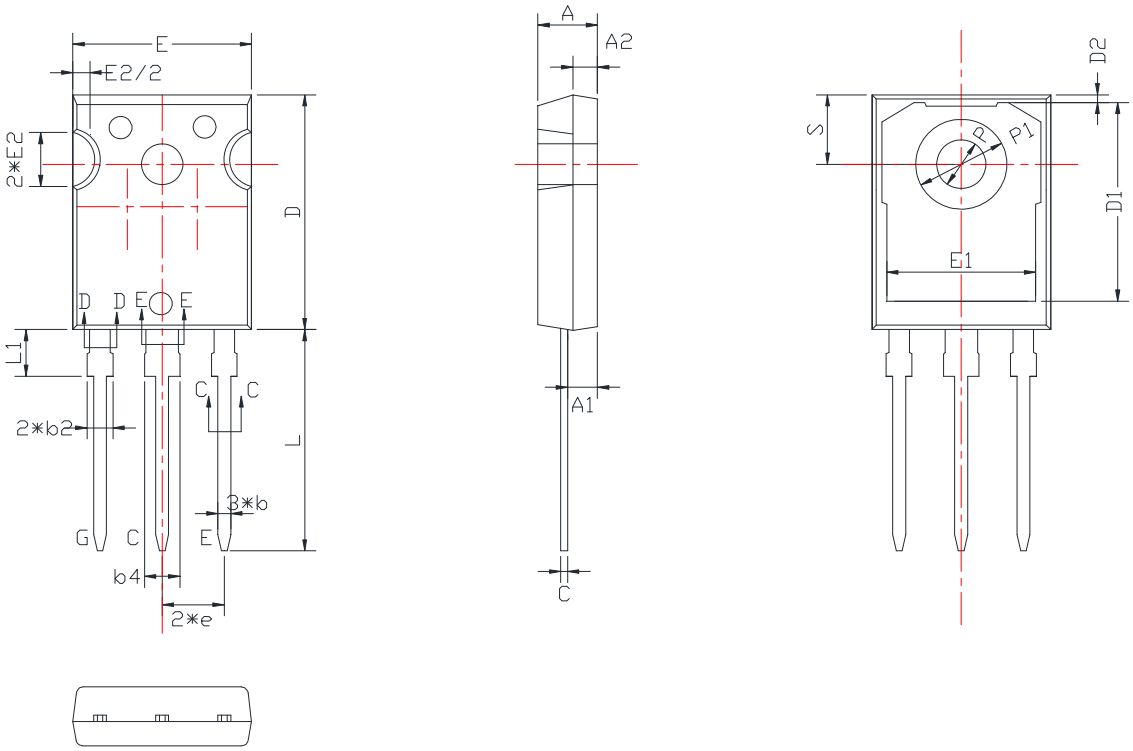
DATA SHEET

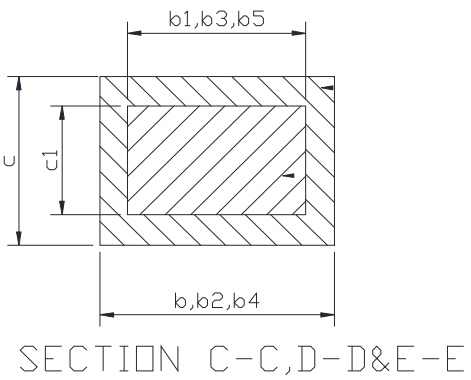
PART NO. : PC30H060AB

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	4.9	5.0	5.1	D1	16.25	16.55	16.85
A1	2.31	2.41	2.51	D2	1.05	1.17	1.35
A2	1.9	2.0	2.1	E	15.7	15.8	15.9
b	1.16	-	1.26	E1	13.2	-	-
b1	1.15	1.2	1.22	E2	4.9	5.0	5.1
b2	1.96	-	2.06	e	5.436BSC		
b3	1.95	2.0	2.02	L	19.8	19.92	20.1
b4	2.96	-	3.06	L1	-	-	4.3
b5	2.95	3.0	3.02	P	3.5	3.6	3.7
c	0.59	-	0.66	P1	-	-	7.4
c1	0.58	0.6	0.62	S	6.05	6.15	6.25
D	20.9	21.0	21.1	t	0.00	-	0.15

Trench Field-Stop Technology IGBT

PC30H060AB

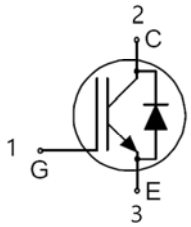
REV:A / 0

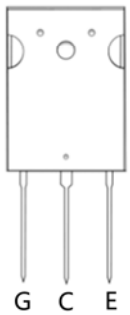
Features

600V, 30A

$V_{CE(sat)(typ.)}$ =1.90V@V_{GE}=15V, I_C=30A

Maximum Junction Temperature 150℃





Applications

Solar Converters

Uninterrupted Power Supply

Welding Converters

Mid to High Range Switching Frequency Converters

Key Performance and Package Parameters

V_{CE}	I_C	V_{CEsat}, T_{vj}=25℃	T_{vjmax}
600V	30A	1.90V	150℃

Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{CES}	Collector-Emitter Voltage	600	V
V_{GES}	Gate-Emitter Voltage	± 30	V
I_C	Continuous Collector Current (T_C=25 ℃)	80	A
	Continuous Collector Current (T_C=100℃)	30	A
I_{CM}	Pulsed Collector Current (Note 1)	120	A
P_D	Maximum Power Dissipation (T_C=25 ℃)	300	W
	Maximum Power Dissipation (T_C=100℃)	120	W
T_J	Operating Junction Temperature Range	-55 to +150	℃
T_{STG}	Storage Temperature Range	-55 to +150	℃

Thermal Data

Symbol	Parameter	Max.	Units
$R_{th\ j\text{-}c}$	Thermal Resistance, Junction to case for IGBT	0.42	℃/ W
$R_{th\ j\text{-}c}$	Thermal Resistance, Junction to case for Diode	1.5	℃/ W
$R_{th\ j\text{-}a}$	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	600	-	-	V
I_{CES}	Collector-Emitter Leakage Current	V_{CE}= 600V, V_{GE}= 0V	-	-	100	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	-	6.5	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	V_{GE}= 15V, I_C= 30A	-	1.9	2.3	V
Qg	Total Gate Charge	V_{CC}=480V V_{GE}=15V I_C=30A	-	105		nC
Qge	Gate-Emitter Charge		-	33		nC
Qgc	Gate-Collector Charge		-	72		nC
$t_{d(on)}$	Turn-on Delay Time	V_{CC}=300V V_{GE}=15V I_C=30A R_G=28 Inductive Load T_C=25 ℃	-	64	-	ns
t_r	Turn-on Rise Time		-	76	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	354	-	ns
t_f	Turn-off Fall Time		-	56	-	ns
Eon	Turn-on Switching Loss		-	0.9	-	mJ
Eoff	Turn-off Switching Loss		-	0.85	-	mJ
Ets	Total Switching Loss		-	1.75	-	mJ
Cies	Input Capacitance	V_{CE}=25V V_{GE}=0V f = 100kHz	-	1395	-	pF
Coes	Output Capacitance		-	68	-	pF
Cres	Reverse Transfer Capacitance		-	26	-	pF
SCSOA	Short Circuit Safe Operation Area	V_{GE}=15V, V_{CC}≤400V, $T_{J,start}$≤25℃	10	---	---	uS

Diode Characteristics (TC=25℃ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_F	Diode Forward Voltage	I_F= 30A	-	1.4	2.4	V
t_{rr}	Diode Reverse Recovery Time	V_{CE} = 300V I_F= 30A dI_F/dt = 200A/us	-	75		ns
I_{rr}	Diode peak Reverse Recovery Current		-	6		A
Q_{rr}	Diode Reverse Recovery Charge		-	220		nC

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

Typical Characteristics

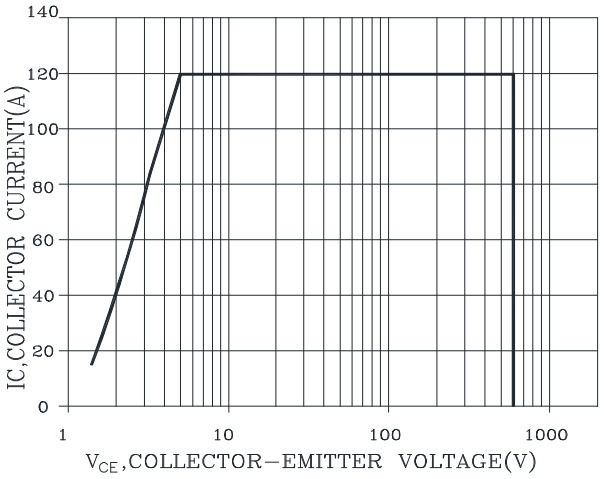


Fig. 1 Forward bias safe operating area (Tj=150℃; V_{GE}=15V)

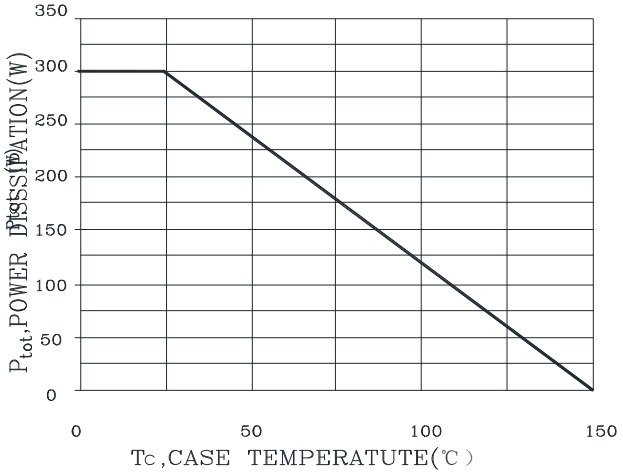


Fig. 2 Power dissipation as a function of case temperature

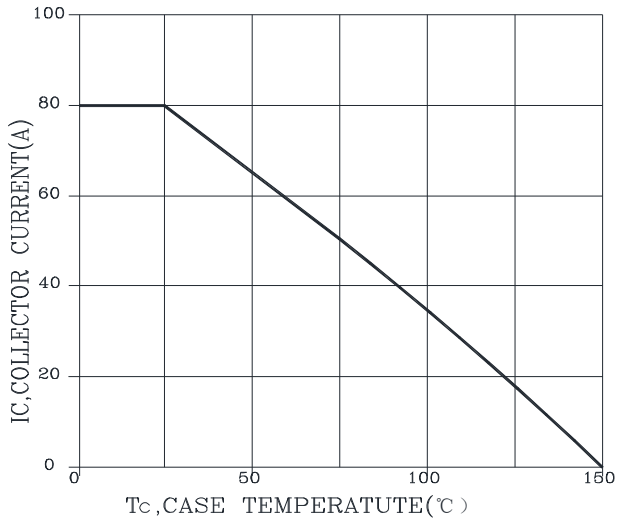


Fig. 3 Collector current as a function of case temperature

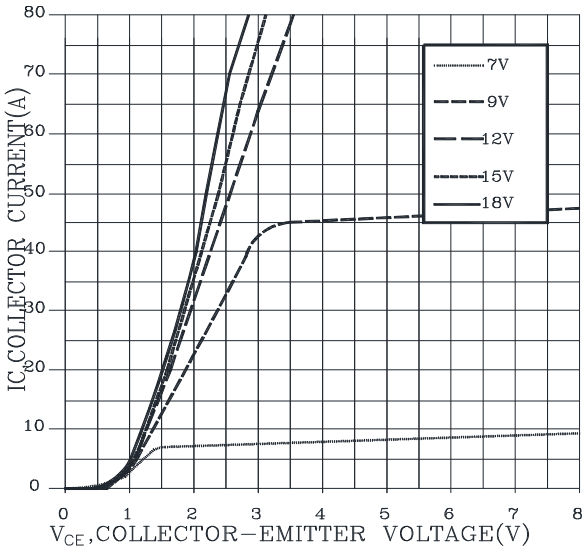


Fig. 4 Typical output characteristic (T_J=25℃; tp=300us)

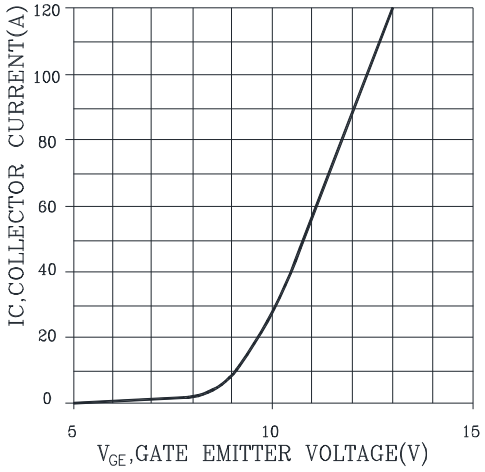


Fig. 5 Typical transfer characteristics (V_{CE}=20V, tp=20us)

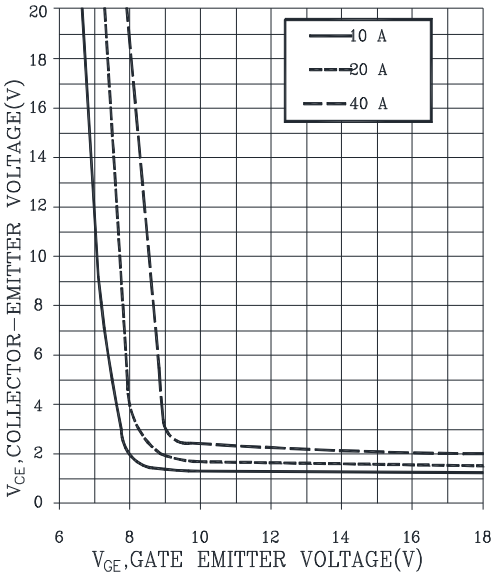


Fig. 6 Typical V_{CE} VS. V_{GE} (T_J=25℃)

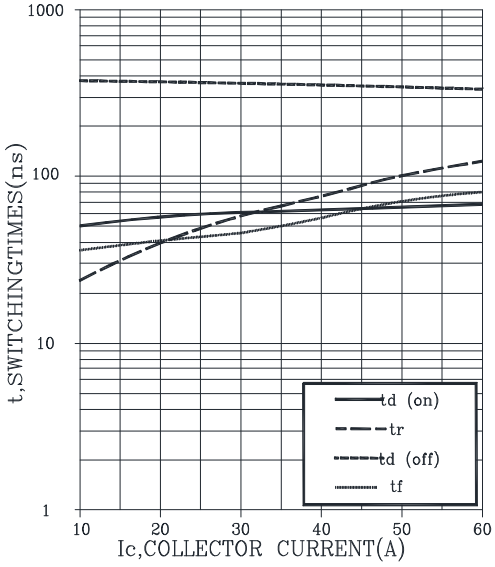


Fig. 7 Typical switching times as a function of collector current (inductive load, T_C=25℃,L=500uH,V_{CE}=300V,V_{GE}=15V,Rg=28Ω)

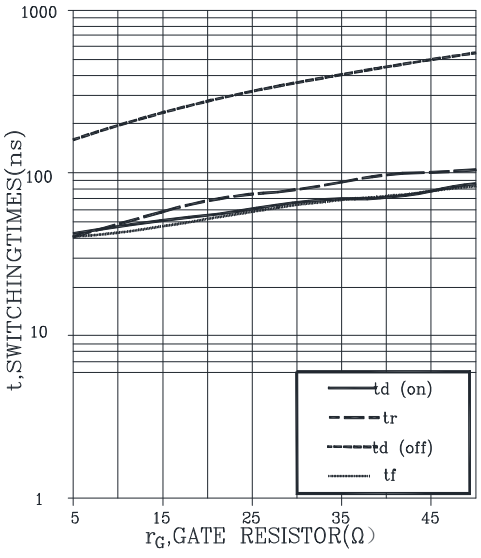


Fig. 8 Typical switching times as a function of gate resistance (inductive load, T_C=25℃, L=500uH, V_{CE}=300V,V_{GE}=15V, I_C=30A)

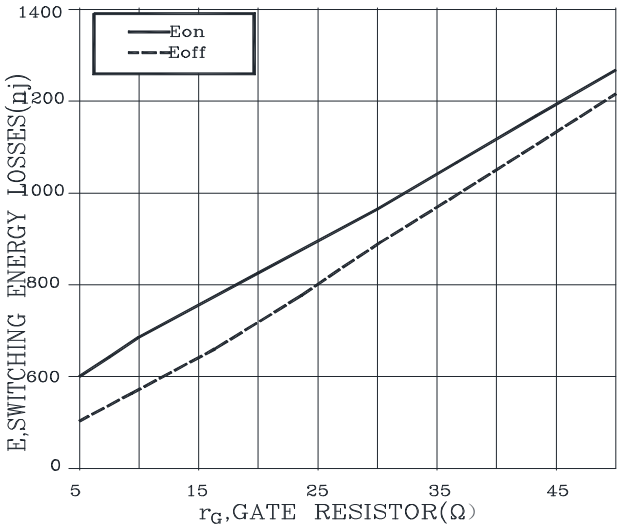


Fig. 9 Typical energy loss VS. Rg, (inductive load, T_C=25℃,L=500uH, V_{CE}=300V, V_{GE}=15V,I_C=30A)

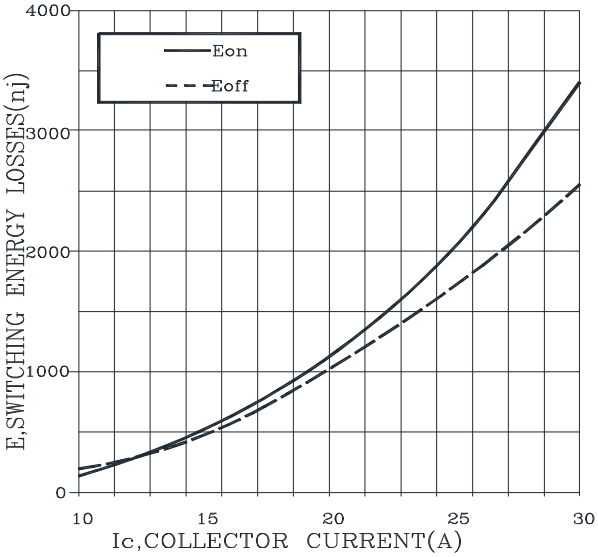


Fig. 10 Typical switching energy losses as a function of collector current (inductive load, T_C=25℃, L=500uH, V_{CE}=300V,V_{GE}=15V,Rg=28Ω)

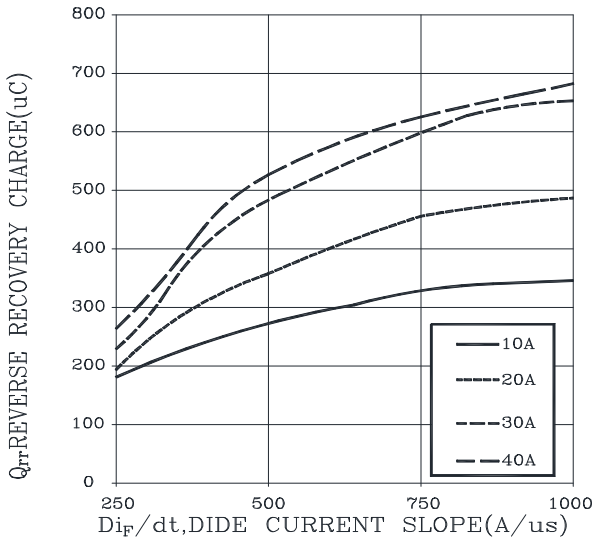


Fig. 11 Typical Diode Qrr VS. dIF/dt (Vcc=300V,V_{GE}=15V)

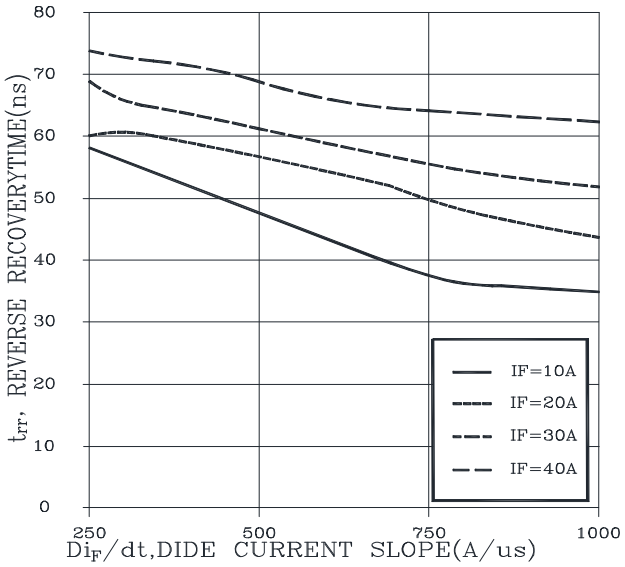


Fig. 12 Typical reverse recovery time as a function of diode current slope(Vcc=300V,V_{GE}=15V)

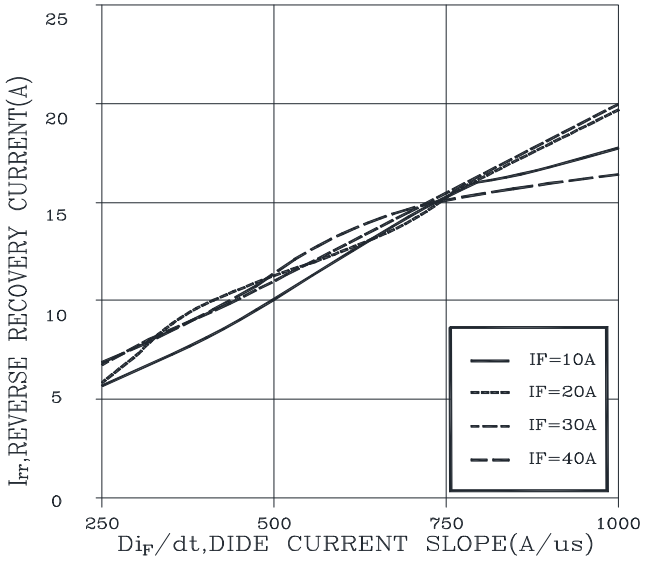


Fig. 13 Typical Diode Irr VS. dIF/dt
(Vcc=300V,V_{GE}=15V)

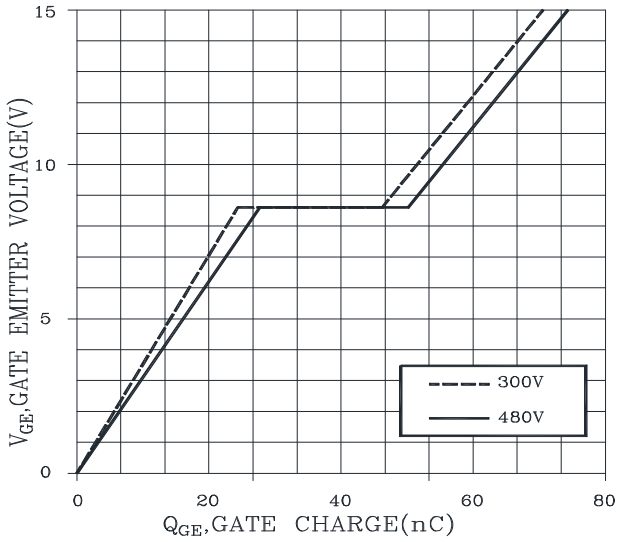


Fig. 14 Typical gate charge (I_C=30A)

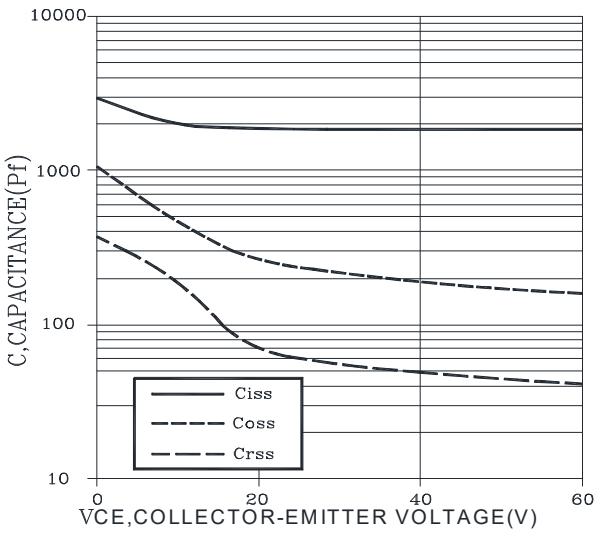


Fig. 15 Typical capacitance as a function of collector-emitter voltage (VGE=0V, f=100kHz)

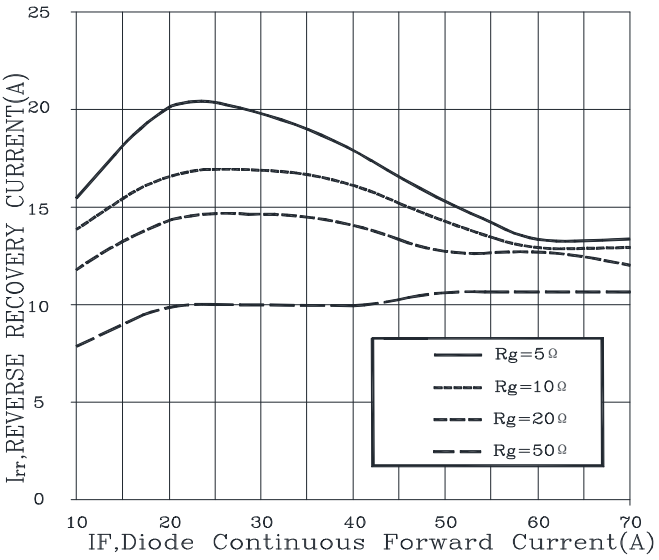


Fig. 16 Typical Diode Irr VS. IF,
(T_C=25℃ V_{CC}=300V, V_{GE}=15V)

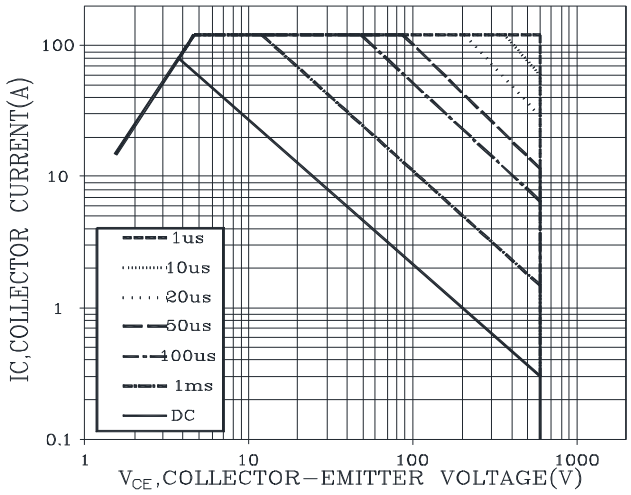


Fig. 17 Forward SOA,T_C=25℃,T_J≤150℃

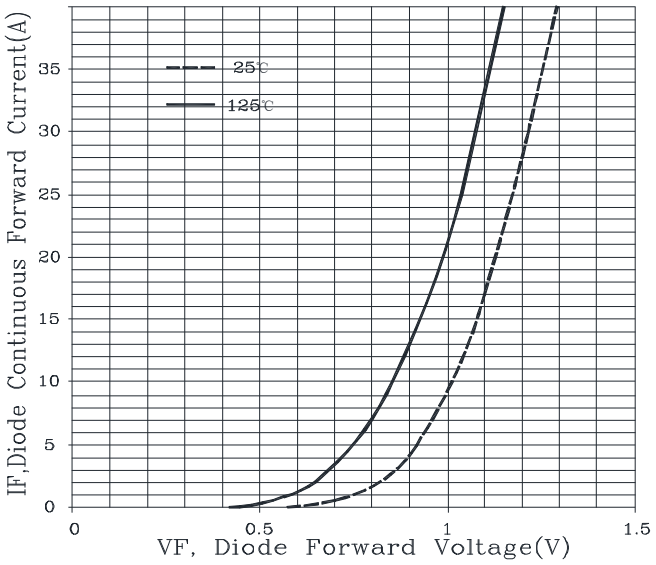


Fig. 18 Typical Diode Forward Characteristic,tp=300us

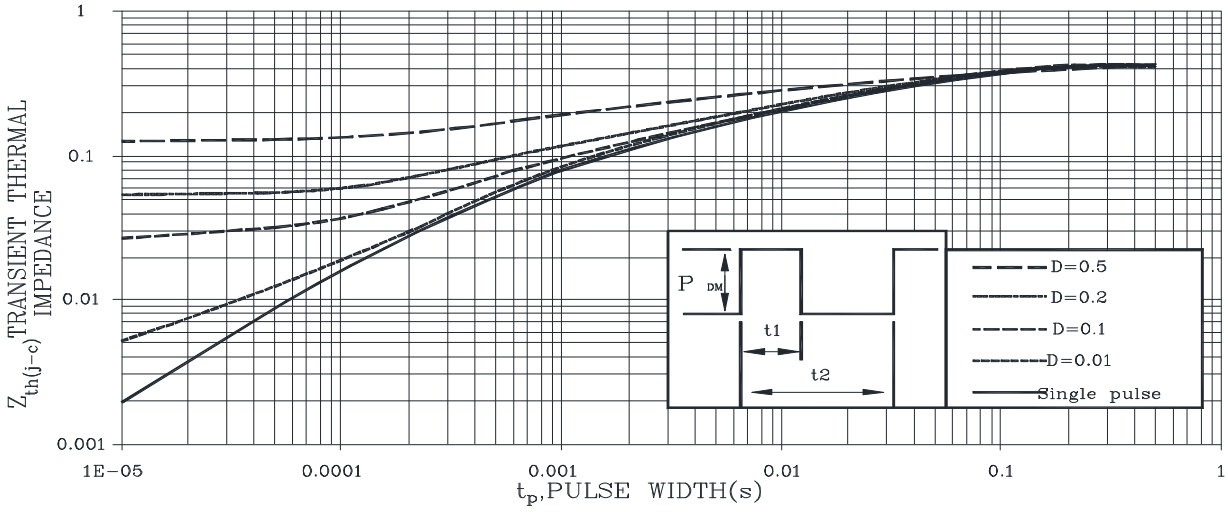


Fig. 19 Normalized Transient Thermal Impedance, Junction-To-Case

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

● PART NO. SYSTEM :

P C 15 H 120 A C