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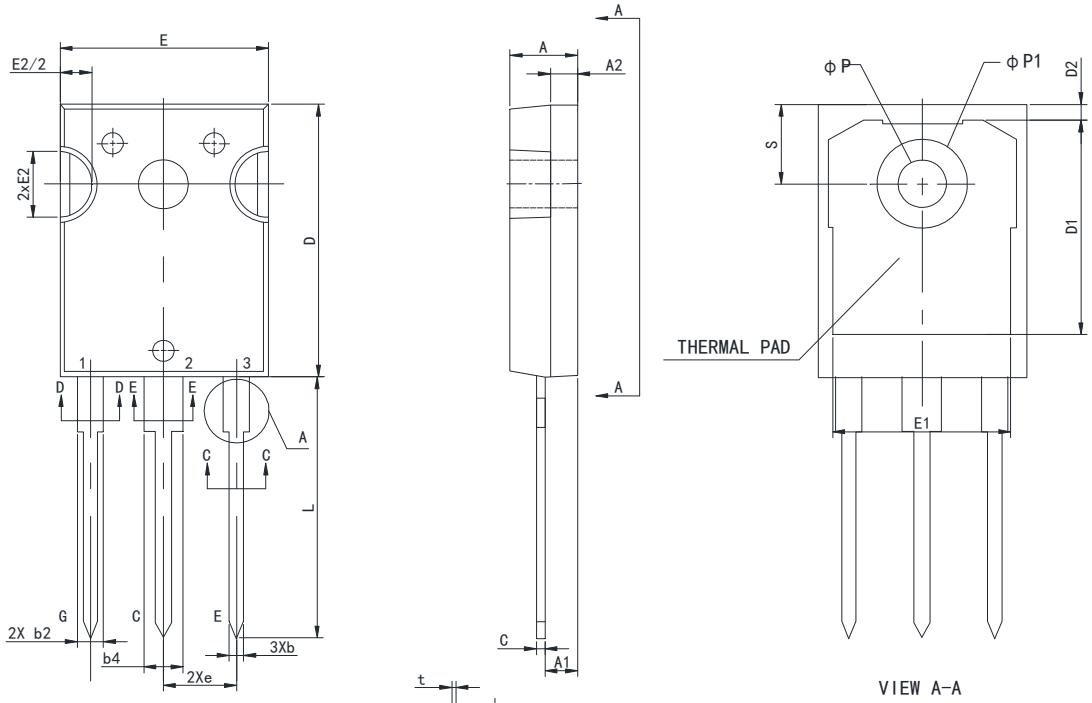
DATA SHEET

PART NO. : PC30H135AB

REV : A / 0

CUSTOMER'S APPROVAL : _____ DCC : _____

Package Dimensions



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	13.26	-	-
b1	1.15	1.2	1.22	E2	4.9	5.0	5.1
b2	1.96	-	2.06	e	5.44BSC		
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

PC30H135AB

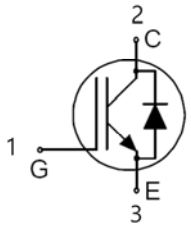
REV:A / 0

Features

1350V, 30A

V_{CE}(sat)(typ.) =2.1V@V_{GE}=15V, I_C=30A

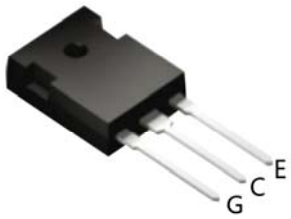
Maximum Junction Temperature 175℃



Applications

Industry Inverter

Power switch circuit of induction cooker



Key Performance and Package Parameters

V_{CE}	I_C	V_{CEsat}, T_{vj}=25℃	T_{vjmax}
1350V	30A	2.1V	175℃

Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage(T_{vj}=25℃)	1350	V
V_{GES}	Gate-Emitter Voltage(T_{vj}=25℃)	±30	V
I_C	Continuous Collector Current(T_C =25℃,T_{vj}=175℃)	60	A
	Continuous Collector Current (T_C =100℃,T_{vj}=175℃)	30	A
I_{CM}	Pulsed Collector Current (Note 1) (T_{vj}≤150℃)	90	A
V_{RRM}	Repetitive peak reverse voltage(T_{vj}=25℃)	1350	V
I_F	Diode Forward Current (T_C =25℃,T_{vj}=175℃)	60	A
	Diode Forward Current (T_C = 100℃,T_{vj}=175℃)	30	A
I_{FRM}	Diode pulsed current(T_{vj}≤150℃)	90	A
T_J	Operating Junction Temperature Range	-50 to 175	℃
T_{STG}	Storage Temperature Range	-50 to 150	℃

Thermal Data

Symbol	Parameter	Max.	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case for IGBT	0.16	K/W
$R_{\theta JC}$	Thermal Resistance, Junction to Case for Diode	0.4	K/W
RθJA	Thermal Resistance, Junction to Ambient	40	K/W

These data are based on the junction-to-case thermal impedance

The R thJH is the sum of the thermal impedance from RthJC and RthCH.

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{CES}	Collector-Emitter Breakdown Voltage	V_{GE} = 0V, Ic =0.5mA,Tvj=25℃	1350	---	---	V
I_{CES}	Collector-Emitter Leakage Current	V_{CE}=1350V,V_{GE}=0V , Tvj=125℃	---	0.0442	1	mA
I_{GES}	Gate Leakage Current, Forward	V_{GE}=30V,V_{CE}=0V, Tvj=125℃	---	---	200	nA
I_{sc}	Short circuit collector current	Tvj=125,VCE=400V ,VGE = 15 V,tsc≤ 10us	---	226	---	A
$V_{GE(th)}$	Gate Threshold Voltage	V_{GE}= V_{CE},Ic =1mA ， Tvj=25℃	4.0	5.78	6.5	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	V_{GE}=15V, I_C=30A, Tvj=25℃	---	2.1	2.5	V
		V_{GE}=15V,I_C=30A, Tvj=125℃	---	2.55	---	V
Q_G	Total Gate Charge	VGE = -15V…15V	---	120	---	nC
$t_{d(on)}$	Turn-on Delay Time(T_{vj}=25℃)	Vcc=600V, Ic=30A, Rg=10Ω , Cge=0nF, VGE=0V/15V, Lload=150uH	---	10	---	ns
	Turn-on Delay Time(T_{vj}=125℃)		---	11		ns
t_r	Turn-on Rise Time(T_{vj}=25℃)		---	23	---	ns
	Turn-on Rise Time(T_{vj}=125℃)		---	23		ns
$t_{d(off)}$	Turn-off Delay Time(T_{vj}=25℃)		---	150	---	ns
	Turn-off Delay Time(T_{vj}=125℃)		---	170		ns
t_f	Turn-off Fall Time(T_{vj}=25℃)		---	195	---	ns
	Turn-off Fall Time(T_{vj}=125℃)		---	232		ns
E_{on}	Turn-on Switching Loss(T_{vj}=25℃)		---	4.6	---	mJ
	Turn-on Switching Loss(T_{vj}=125℃)		---	5.1	---	mJ
E_{off}	Turn-off Switching Loss(T_{vj}=25℃)		---	1.3	---	mJ
	Turn-off Switching Loss(T_{vj}=125℃)		---	1.78	---	mJ
E_{ts}	Total Switching Loss(T_{vj}=25℃)		---	5.9	---	mJ
	Total Switching Loss(T_{vj}=125℃)		---	6.88	---	mJ

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
C_{ies}	Input Capacitance	V_{GE} = 0V,V_{CE}= 25V, f = 1MHz, T_{vj}=25℃	---	3570	---	pF
C_{oes}	Output Capacitance		---	67.9	---	pF
C_{res}	Reverse Transfer Capacitance		---	37.6	---	pF
SCSOA	Short Circuit Safe Operation Area	V_{GE}=15V,V_{CC}≤600V, T_{vj}=125℃	---	---	10	uS
R_g	Internal gate resistor	T_{vj}=25°C	---	22	---	Ω

Diode Characteristics (TC=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Diode Forward Voltage	V_{GE}= 0,IF=30A, Tvj=25℃	---	2.66	2.7	V
t_{rr}	Diode Reverse Recovery Time(T_{vj}=25℃)	I_F = 30A, V_R=600V, V_{GE} = 0 V, Rg=10Ω	---	330	---	ns
	Diode Reverse Recovery Time(T_{vj}=125℃)		---	496	---	ns
I_{rr}	Diode peak Reverse Recovery Current(T_{vj}=25℃)		---	33	---	A
	Diode peak Reverse Recovery Current(T_{vj}=125℃)		---	37	---	A
E_{rec}	Reverse recovery energy(T_{vj}=25℃)		---	0.82	---	mJ
	Reverse recovery energy(T_{vj}=125℃)		---	1.13	---	mJ

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

Typical Characteristics

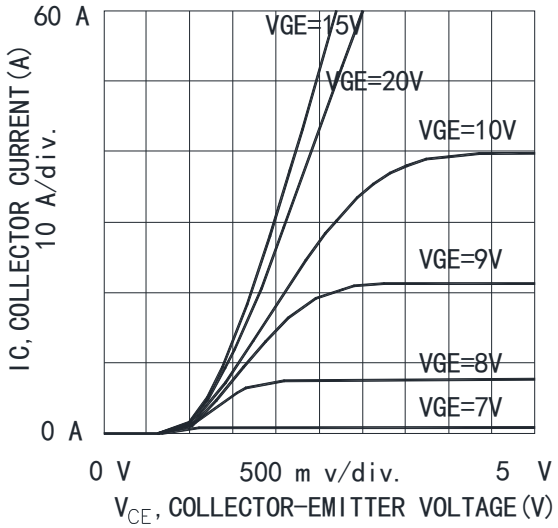


Fig. 1 Typical Output Characteristic (T_c=25℃)

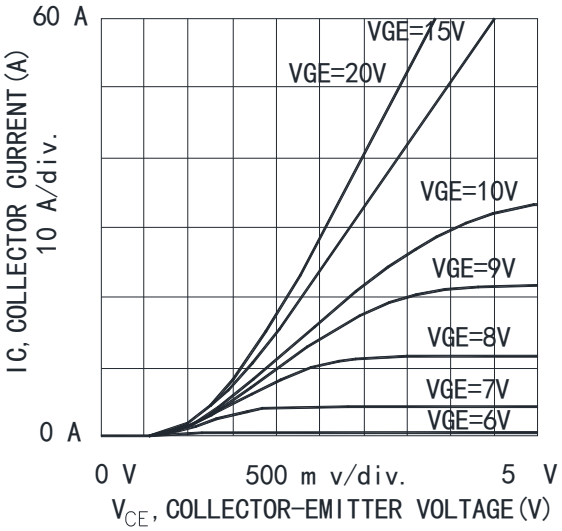


Fig. 2 Typical Output Characteristic (T_c=125℃)

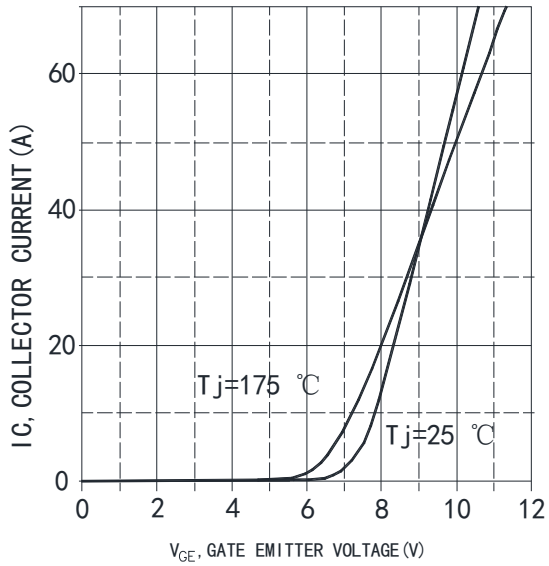


Fig. 3 Typical transfer characteristic

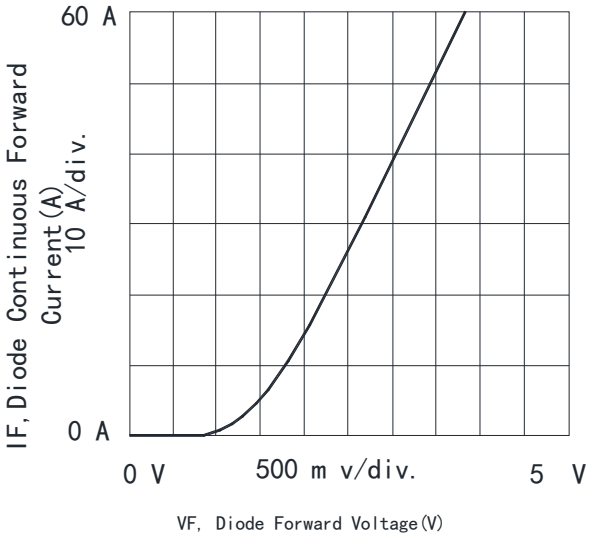


Fig. 4 Typical IF as a function of VF (T_{vj}=25℃)

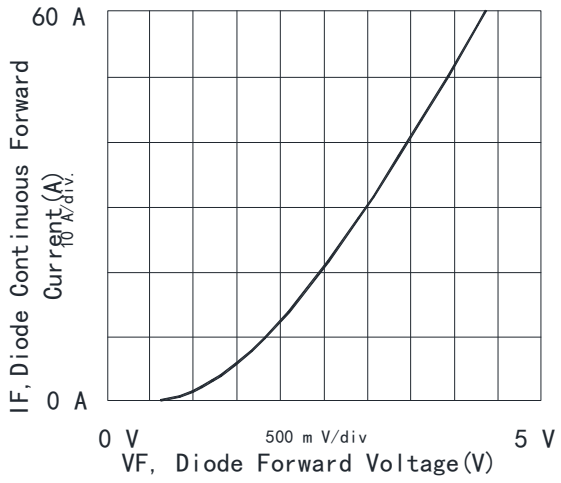


Fig. 5 Typical IF as a function of VF (T_c=175℃)

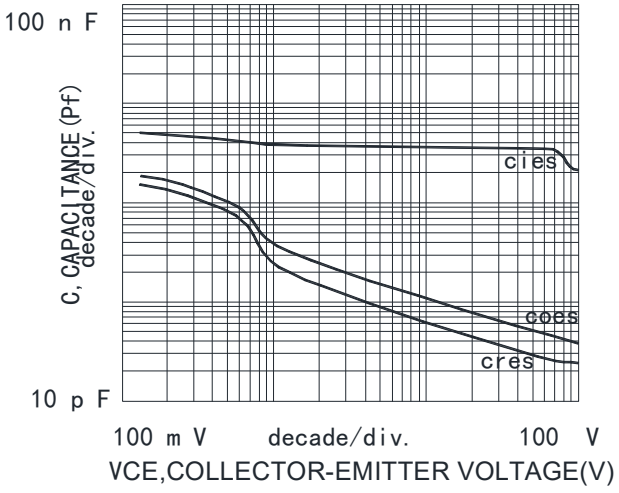


Fig. 6 Typical capacitance as a function of collector-emitter voltage

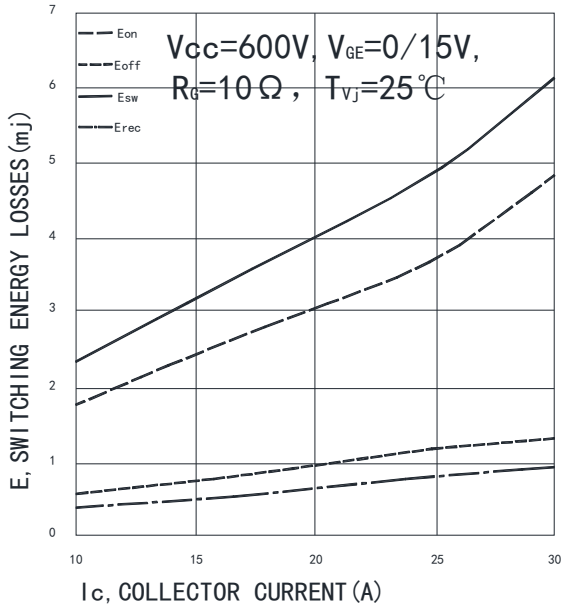


Fig. 7 Typical switching energy losses as a function of collector current

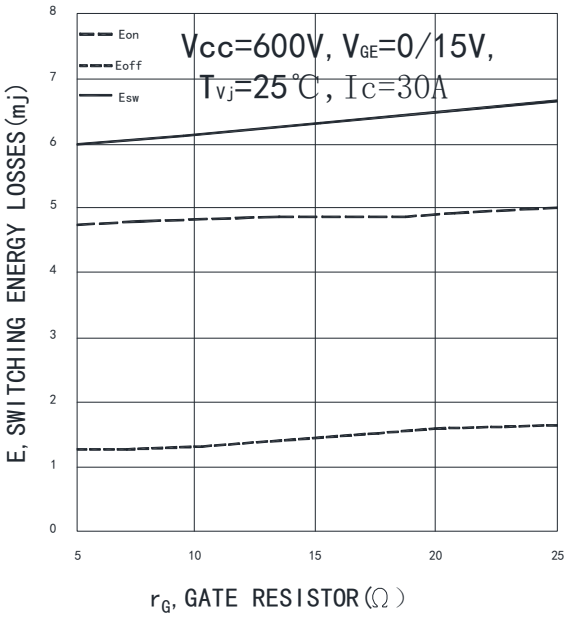


Fig. 8 Typical switching losses as RG

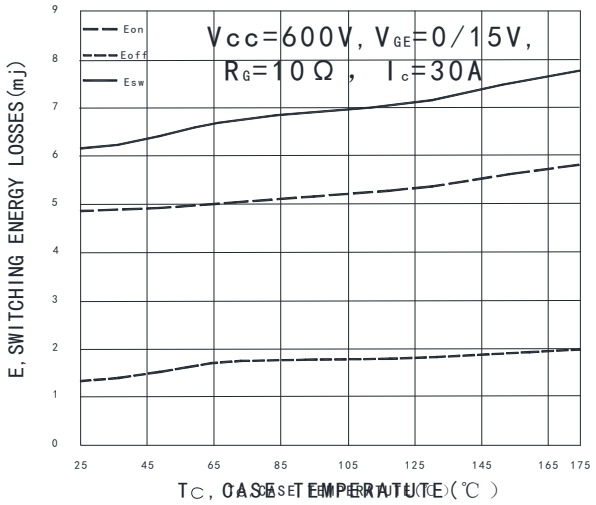


Fig. 9 Typical switching losses as Tc

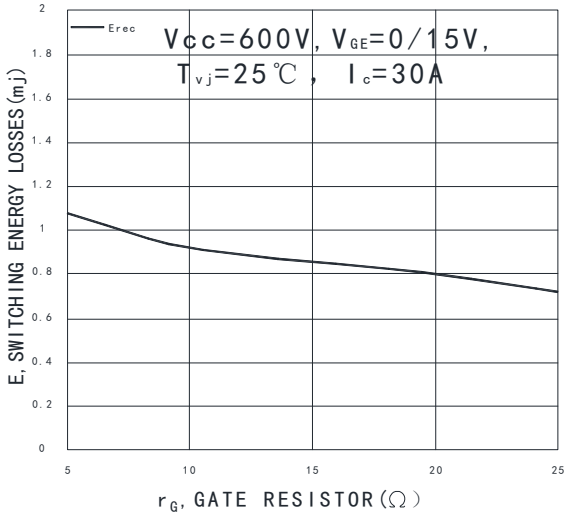


Fig. 10Typical switching losses as RG

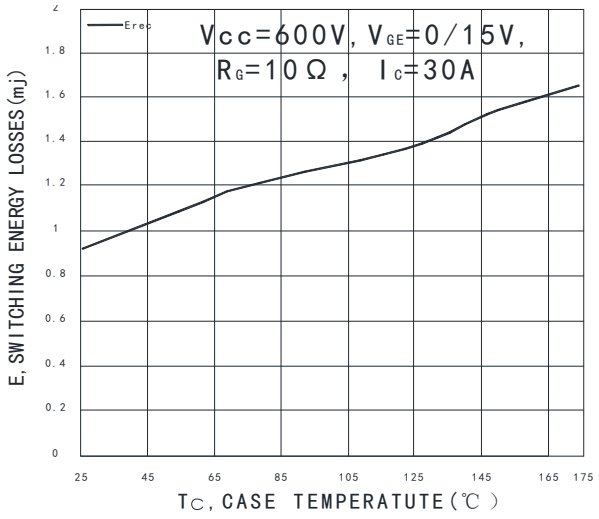


Fig. 11Typical switching losses as Tc

● PART NO. SYSTEM :

P C 15 H 120 A C