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DATA SHEET

PART NO. : PC25H135EB

REV : A / 0

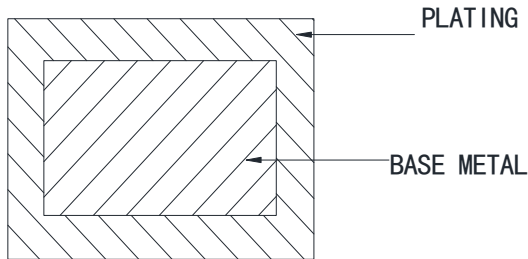
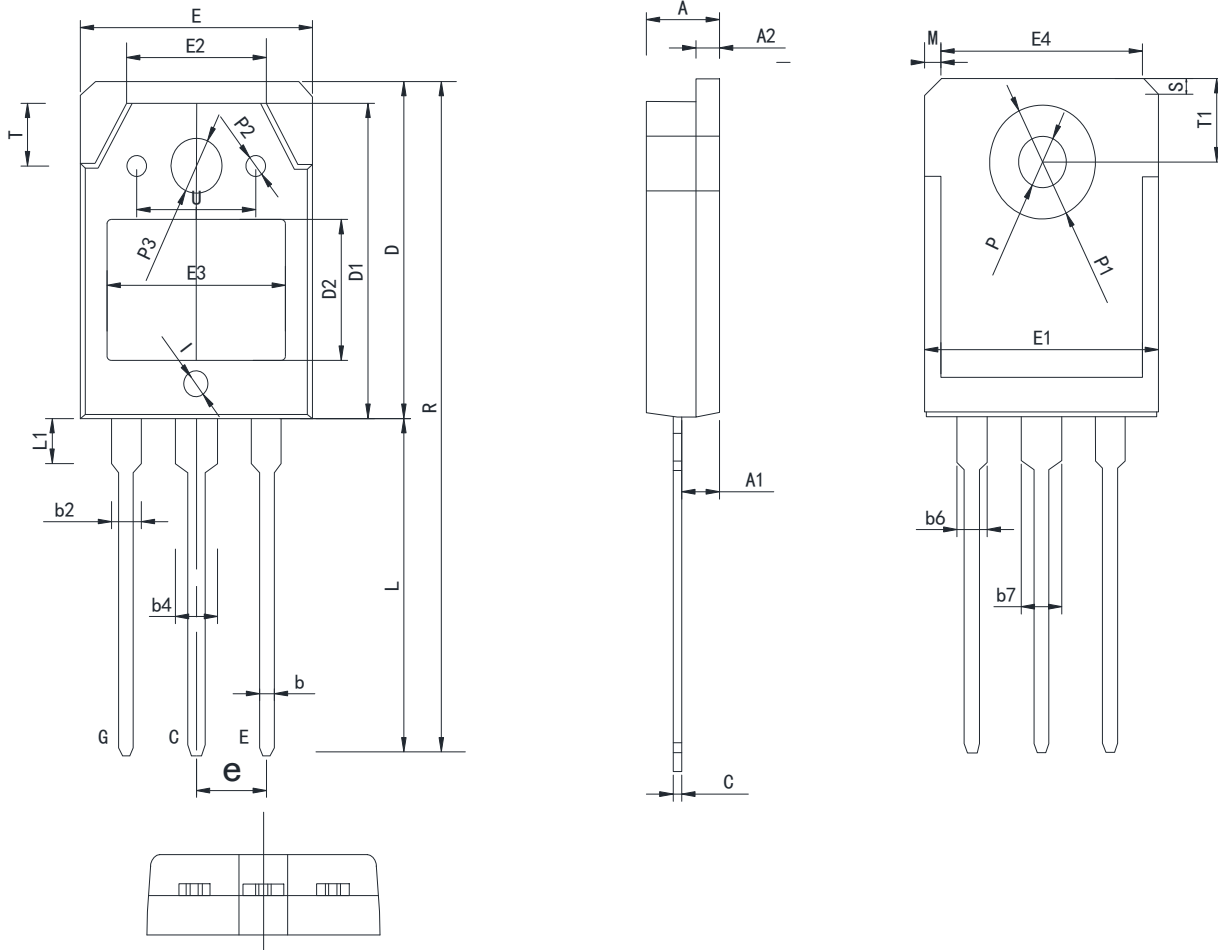
CUSTOMER'S APPROVAL : _____ DCC : _____

DRAWING NO. : DS-91P-22-0009

DATE : 2023-06-07

Page : 1

Package Dimensions



SECTION C-C, D-D&E-E

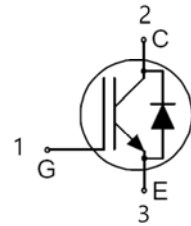
Common dimensions(mm)							
Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	4.5	0	5.1	E1	15.35	0	15.95
A1	2.1	0	2.7	R	39.4	0	40.6
A2	1.35	0	1.65	E2	9.2	0	9.8
b	0.85	0	1.15	E3	11.55	0	12.15
b1	0	0	0	E4	13.3	0	13.9
b2	1.95	0	2.25	e	5.45BSC		
b3	0	0	0	L	19.6	0	20.4
b4	2.95	0	3.25	L1	2.9	0	3.5
b5	0	0	0	P	2.9	0	3.5
c	0.45	0	0.75	P1	6.7	0	7.3
c1	0	0	0	S	1.4	0	2.2
D	18.4	0	19.0	T	3.5	0	4.1
D1	13.6	0	14.2	T1	4.7	0	5.3
D2	8.1	0	8.7	H	3.2	0	3.8
E	15.3	0	15.9	I	1.2	0	1.8

Features

1350V, 25A

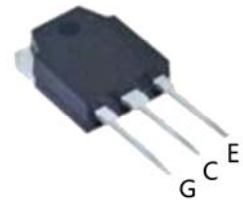
$V_{CE(sat)(typ.)} = 1.90V @ V_{GE} = 15V, I_C = 25A$

Maximum Junction Temperature 175°C



Applications

Induction cooker



Key Performance and Package Parameters

V_{CE}	I_C	$V_{CEsat}, T_{vj}=25^{\circ}C$	T_{vjmax}
1350V	25A	1.9V	175°C

Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage($T_{vj}=25^{\circ}C$)	1350	V
V_{GES}	Gate-Emitter Voltage($T_{vj}=25^{\circ}C$)	± 30	V
I_C	Continuous Collector Current($T_C = 25^{\circ}C$)	50	A
	Continuous Collector Current ($T_C = 100^{\circ}C$)	25	A
I_{CM}	Pulsed Collector Current (Note 1) ($T_{vj} \leq 175^{\circ}C$)	75	A
I_F	Diode Forward Current ($T_C = 25^{\circ}C$)	50	A
	Diode Forward Current ($T_C = 100^{\circ}C$)	25	A
I_{FRM}	Diode pulsed current($T_{vj} \leq 175^{\circ}C$)	75	A
P_D	Maximum Power Dissipation ($T_C = 25^{\circ}C$)	310	W
T_J	Operating Junction Temperature Range	-40 to 175	°C
T_{STG}	Storage Temperature Range	-50 to 150	°C

Thermal Data

Symbol	Parameter	Max.	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case for IGBT	0.46	°C/W
$R_{\theta JC}$	Thermal Resistance, Junction to Case for Diode	1.49	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	40	°C/W

Electrical Characteristics (Tc=25°C unless otherwise noted.)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{CES}	Collector-Emitter Breakdown Voltage	V _{GE} = 0V, I _c =0.5mA, T _{vj} =25°C	1350	---	---	V
I _{CES}	Collector-Emitter Leakage Current	V _{CE} =1350V, V _{GE} =0V, T _{vj} =175°C	---	---	1	μA
I _{GES}	Gate Leakage Current, Forward	V _{GE} =30V, V _{CE} =0V, T _{vj} =125°C	---	---	200	nA
I _{GESR}	Gate to Emitter reverse Leakage current	V _{GE} =-30V, V _{CE} =0V, T _{vj} =175°C	-200	---	---	nA
V _{GE(th)}	Gate Threshold Voltage	V _{GE} = V _{CE} , I _c =1mA, T _{vj} =25°C	5.0	5.8	6.5	V
V _{CE(sat)}	Collector-Emitter Saturation Voltage	V _{GE} =15V, I _c =25A, T _{vj} =25°C	---	1.9	2.1	V
		V _{GE} =15V, I _c =25A, T _{vj} =175°C	---	2.4	---	V
Q _G	Total Gate Charge	I _c =25A, V _{CE} =960V, V _{GE} =15V, T _{vj} =25°C	---	148	---	nC
Q _{GE}	Gate-Emitter Charge		---	18	---	nC
Q _{GC}	Gate-Collector Charge		---	76	---	nC
t _{d(on)}	Turn-on Delay Time(T _{vj} =25°C)		---	230	---	ns
	Turn-on Delay Time(T _{vj} =175°C)	---	500	---	ns	
t _r	Turn-on Rise Time(T _{vj} =25°C)	V _{CC} =600V, I _c =30A, R _g =10Ω, C _{ge} =0nF, V _{GE} =0V/15V, L _{load} =150μH	---	1	---	ns
	Turn-on Rise Time(T _{vj} =175°C)		---	4.7	---	ns
t _{d(off)}	Turn-off Delay Time(T _{vj} =25°C)		---	6	---	ns
	Turn-off Delay Time(T _{vj} =175°C)		---	17	---	ns
t _f	Turn-off Fall Time(T _{vj} =25°C)		---	15	---	ns
	Turn-off Fall Time(T _{vj} =175°C)		---	28	---	ns
E _{on}	Turn-on Switching Loss(T _{vj} =25°C)		---	1.3	---	mJ
	Turn-on Switching Loss(T _{vj} =175°C)		---	2.1	---	mJ
E _{off}	Turn-off Switching Loss(T _{vj} =25°C)		---	230	---	mJ
	Turn-off Switching Loss(T _{vj} =175°C)		---	500	---	mJ
E _{av}	Avalanche energy, single pulse	I _c =60A, R _G =10Ω T _{vj} =25°C, V _{GE} =15V	---	300	---	mJ

Electrical Characteristics (Tc=25°C 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°C	---	2280	---	pF
C _{oes}	Output Capacitance		---	63	---	pF
C _{res}	Reverse Transfer Capacitance		---	45	---	pF
SCSOA	Short Circuit Safe Operation Area	V _{GE} = 15V, V _{CC} ≤ 600V, T _{vj} = 25°C	10	---	---	μS
R _g	Internal gate resistor		---	0	---	Ω

Diode Characteristics (TC=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V _F	Diode Forward Voltage	V _{GE} = 0V, I _F = 25A, T _{vj} = 25°C	---	2.5	2.9	V
		V _{GE} = 0V, I _F = 25A, T _{vj} = 175°C	---	2.1	---	V
t _{rr}	Diode Reverse Recovery Time(T _{vj} = 25°C)	I _F = 25A, V _R = 600V, di _F /dt = -250A/μs	---	230	---	ns
	Diode Reverse Recovery Time(T _{vj} = 175°C)		---	500	---	ns
I _{rr}	Diode peak Reverse Recovery Current(T _{vj} = 25°C)		---	6	---	A
	Diode peak Reverse Recovery Current(T _{vj} = 175°C)		---	17	---	A
di _{rr} /dt	Peak rate of i _{rr} (T _{vj} = 25°C)		---	15	---	A/μs
	Peak rate of i _{rr} (T _{vj} = 175°C)		---	28	---	A/μs
E _{rec}	Reverse recovery energy(T _{vj} = 25°C)		---	1.3	---	mJ
	Reverse recovery energy(T _{vj} = 175°C)		---	2.1	---	mJ

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

Typical Characteristics

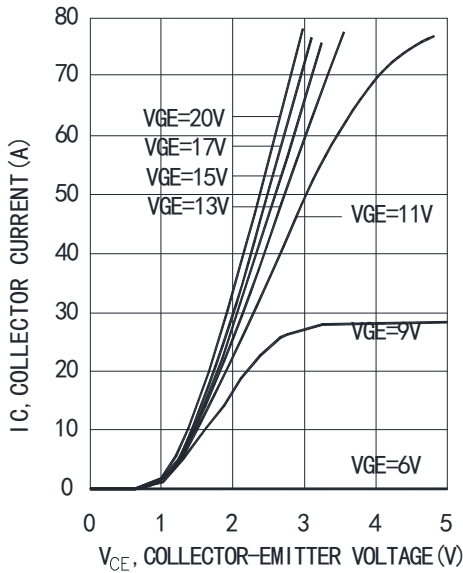


Fig. 1 Typical Output Characteristic (Tc=25°C)

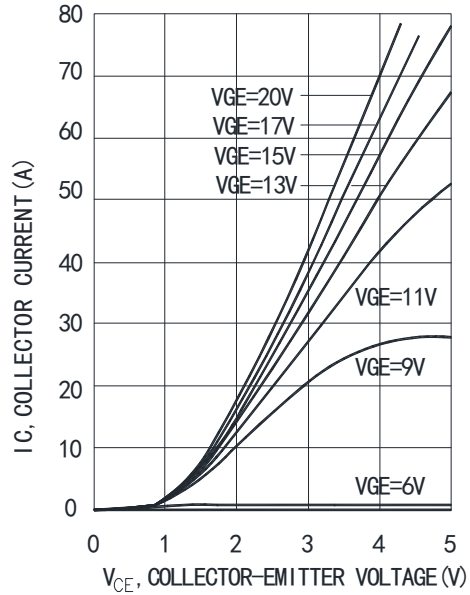


Fig. 2 Typical Output Characteristic (Tc=175°C)

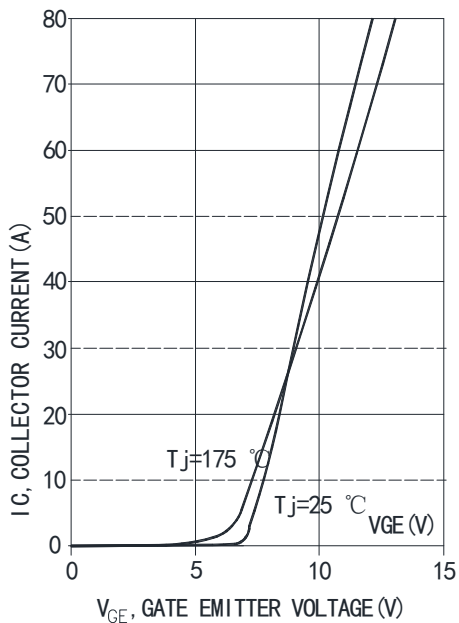


Fig. 3 Typical transfer characteristic

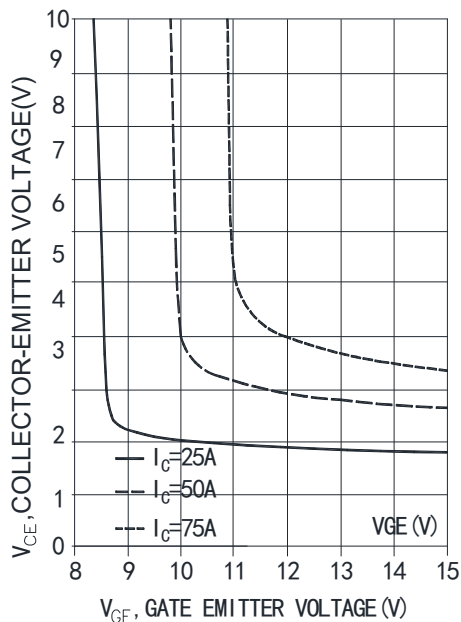


Fig. 4 Typical VCE as a function of VGE

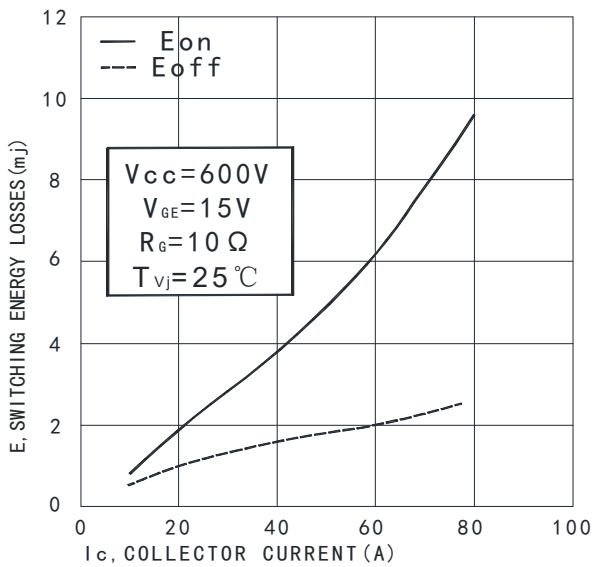


Fig. 5 Typical switching energy losses as a function of collector current

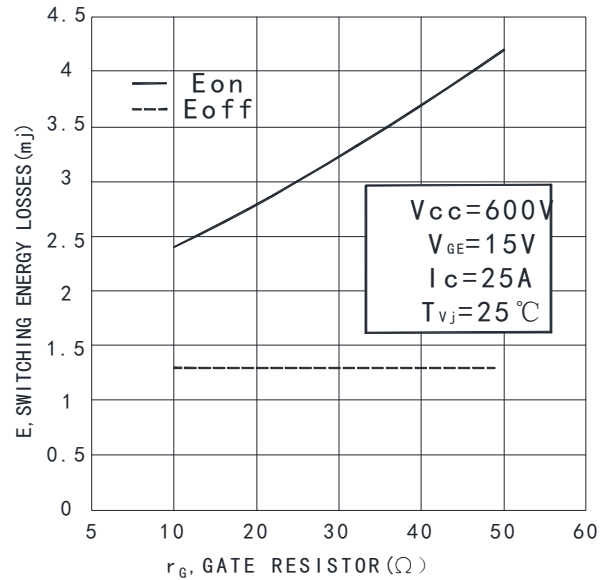


Fig. 6 Typical switching losses as R_G

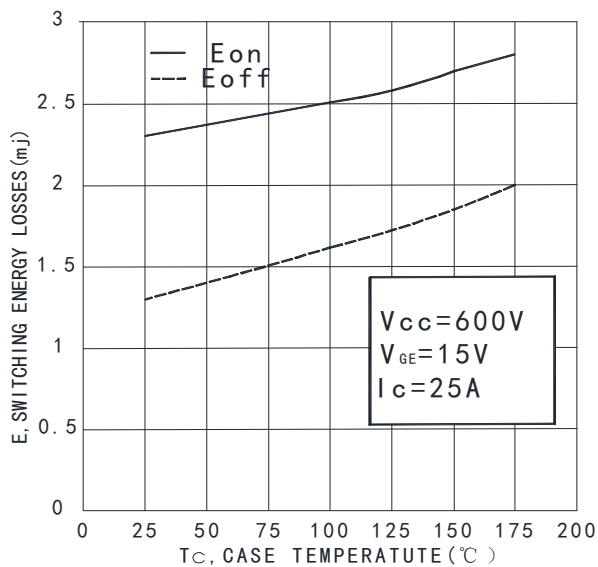


Fig. 7 Typical switching losses as T_c

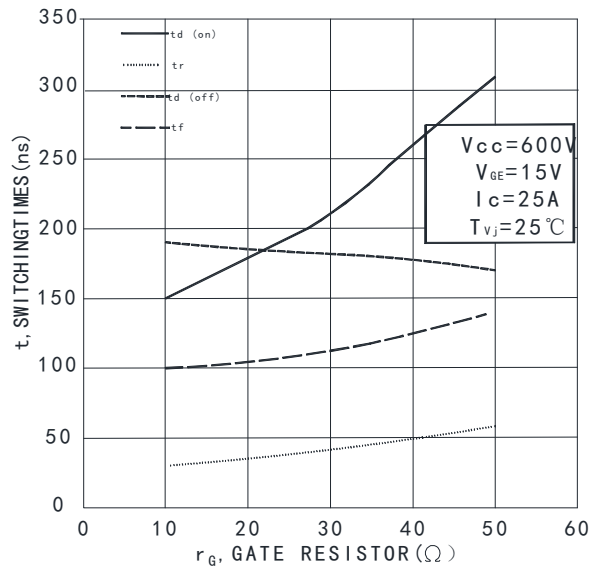


Fig. 8 Typical switching losses as R_G

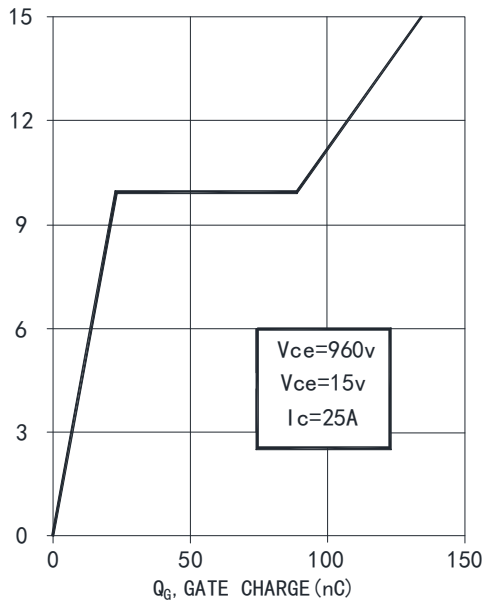


Fig. 5 Typical gate charge

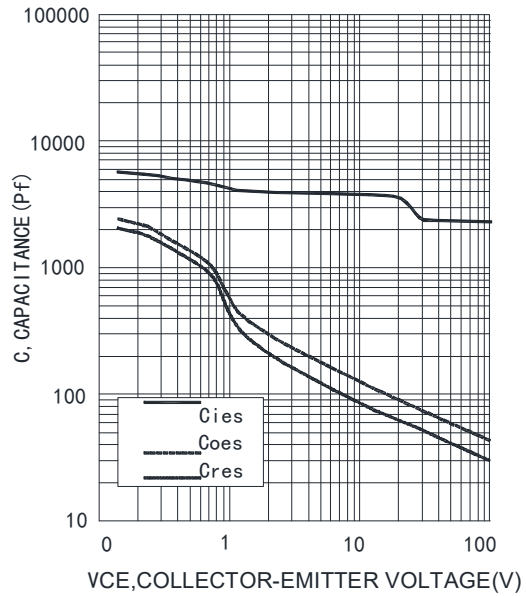


Fig. 6 Capacitance as a function of Vce

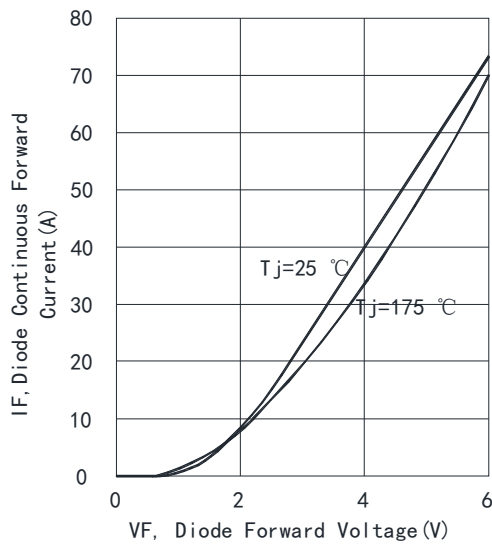


Fig. 7 Typical I_F as a function of V_F

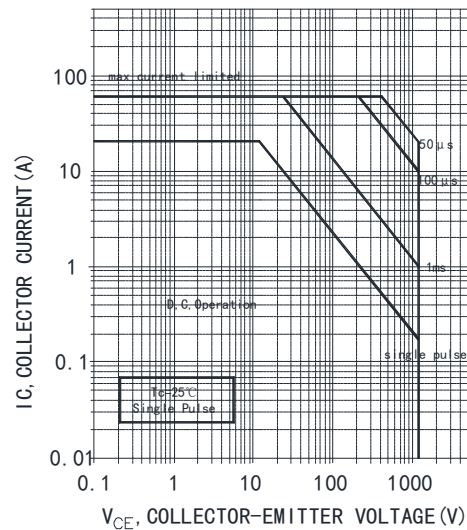


Fig. 8 Forward bias safe operating



Trench Field-Stop Technology IGBT

PC25H135EB

REV:A / 0

● PART NO. SYSTEM :

P C 15 H 120 A C

