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DATA SHEET

PART NO. : PC60H065AB

REV : A / 0

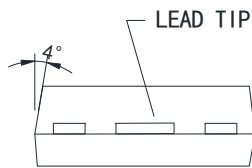
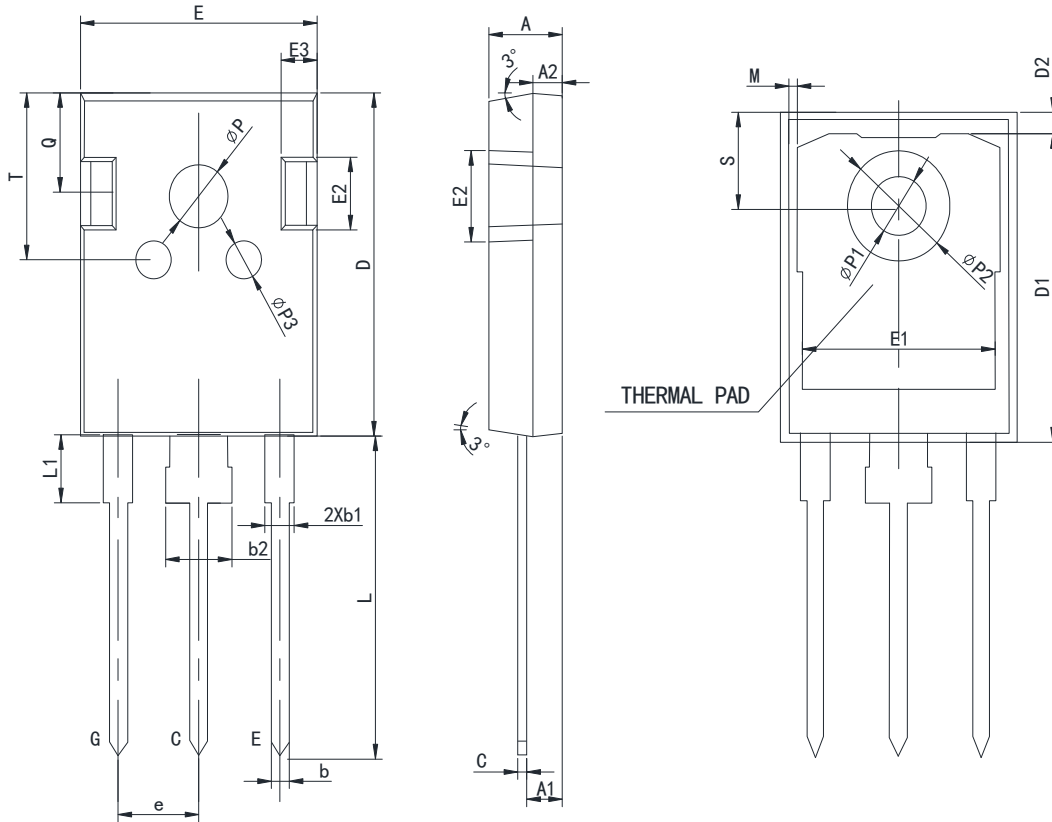
CUSTOMER'S APPROVAL : _____ DCC : _____

DRAWING NO. : DS-91P-23-0003

DATE : 2023-06-07

Page : 1

Package Dimensions



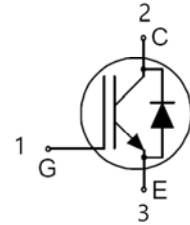
Common dimensions(mm)							
Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	4.9	5	5.1	L	19.8	19.92	20.1
A1	2.31	2.41	2.51	L1	-	-	4.30
A2	1.9	2	2.1	ϕP	3.70	3.80	3.90
b	1.15	1.2	1.25	$\phi P1$	3.50	3.60	3.70
b1	1.95	2.1	2.25	$\phi P2$	7.00	7.20	7.40
b2	2.95	3.1	3.25	$\phi P3$	2.40	2.50	2.60
C	0.55	0.6	0.65	Q	5.60	5.80	6.00
D	20.9	21	21.1	S	6.05	6.15	6.25
D1	16.35	16.55	16.75	T	9.8	10	10.2
D2	1.05	1.2	1.35	U	6	6.2	6.4
E	15.7	15.8	15.9	e1	5°	7°	9°
E1	13.1	13.25	13.4	e2	1°	3°	5°
E2	4.9	5	5.1	e3	13°	15°	17°
E3	2.4	2.5	2.6				
e	5.4	5.44	5.48				

Features

650V, 60A

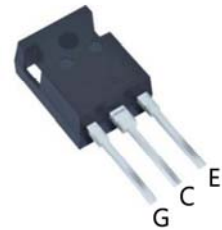
$V_{CE(sat)(typ.)} = 1.75V$ $I_C = 60A$

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}
650V	60A	1.75V	175°C

Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{CES}	Collector-Emitter Voltage($T_{vj}=25^{\circ}C$)	650	V
V_{GES}	Gate to emitter voltage	± 20	V
	Transient Gate - emitter voltage ($tp < 10\mu s, D < 0.01$)	± 30	V
I_C	Continuous Collector Current($T_C = 25^{\circ}C$)	90	A
	Continuous Collector Current ($T_C = 100^{\circ}C$)	60	A
I_{CM}	Pulsed Collector Current (Note 1) ($T_{vj} \leq 175^{\circ}C$)	180	A
I_F	Diode Forward Current ($T_C = 25^{\circ}C$)	90	A
	Diode Forward Current ($T_C = 100^{\circ}C$)	60	A
I_{FRM}	Diode pulsed current($T_{vj} \leq 175^{\circ}C$)	180	A
T_{sc}	Short circuit withstand time ($V_{GE}=15V, V_{CC} \leq 400V, T_J = 150^{\circ}C$)	10	us
P_D	Maximum Power Dissipation ($T_C = 25^{\circ}C$)	385	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	0.39	K/W
$R_{\theta JC}$	Thermal Resistance, Junction to Case for Diode	1.1	K/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	40	K/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 = 0.25mA, T _{vj} = 25°C	650	---	---	V
I _{CES}	Zero gate voltage collector current	V _{CE} = 650V, V _{GE} = 0V, T _{vj} = 25°C	---	---	20	uA
		V _{CE} = 650V, V _{GE} = 0V, T _{vj} = 175°C	---	200	---	
I _{GES}	Gate Leakage Current, Forward	V _{GE} = ± 30V, V _{CE} = 0V, T _j = 25°C	---	---	± 100	nA
V _{GE(th)}	Gate Threshold Voltage	V _{GE} = V _{CE} , I _C = 1mA, T _{vj} = 25°C	5.0	6.0	6.8	V
V _{CE(sat)}	Collector-Emitter Saturation Voltage	V _{GE} = 15V, I _C = 60A, T _{vj} = 25°C	---	1.75	2.2	V
		V _{GE} = 15V, I _C = 60A, T _{vj} = 175°C	---	2.3	---	V
Q _G	Total Gate Charge	I _C = 60A, V _{CE} = 480V, V _{GE} = 15V,	---	97	---	nC
t _{d(on)}	Turn-on Delay Time(T _{vj} = 25°C)	V _{CC} = 400V, I _C = 60A, R _g = 10Ω, C _{ge} = 0nF, V _{GE} = 0V/15V, L _σ = 102nH	---	28	---	ns
	Turn-on Delay Time(T _{vj} = 175°C)		---	32	---	ns
t _r	Turn-on Rise Time(T _{vj} = 25°C)		---	122	---	ns
	Turn-on Rise Time(T _{vj} = 175°C)		---	126	---	ns
t _{d(off)}	Turn-off Delay Time(T _{vj} = 25°C)		---	102	---	ns
	Turn-off Delay Time(T _{vj} = 175°C)		---	115	---	ns
t _f	Turn-off Fall Time(T _{vj} = 25°C)		---	134	---	ns
	Turn-off Fall Time(T _{vj} = 175°C)		---	199	---	ns
E _{on}	Turn-on Switching Loss(T _{vj} = 25°C)		---	3.4	---	mJ
	Turn-on Switching Loss(T _{vj} = 175°C)		---	5	---	mJ
E _{off}	Turn-off Switching Loss(T _{vj} = 25°C)		---	1.4	---	mJ
	Turn-off Switching Loss(T _{vj} = 175°C)		---	1.9	---	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	---	2840	---	pF
C _{oes}	Output Capacitance		---	216	---	pF
C _{res}	Reverse Transfer Capacitance		---	50	---	pF
I _{SC}	Short circuit collector current	T _J = 150°C, V _{CE} = 400V, V _{GE} = 15V, t _{sc} ≤ 10μs	---	150	---	A
R _{gin}	Internal gate resistor	f = 1MHz	---	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 = 60A, T _{vj} = 25°C	---	1.75	2.2	V
		V _{GE} = 0V, I _F = 60A, T _{vj} = 175°C	---	1.5	---	V
t _{rr}	Diode Reverse Recovery Time(T _{vj} = 25°C)	I _F = 60A, V _R = 400V, di _F /dt = -500A/μs	---	64	---	ns
	Diode Reverse Recovery Time(T _{vj} = 175°C)		---	157	---	ns
I _{rr}	Diode peak Reverse Recovery Current(T _{vj} = 25°C)		---	8	---	A
	Diode peak Reverse Recovery Current(T _{vj} = 175°C)		---	22	---	A
di _{rr} /dt	Peak rate of i _{rr} (T _{vj} = 25°C)		---	522	---	A/μs
	Peak rate of i _{rr} (T _{vj} = 175°C)		---	527	---	A/μs
E _{rec}	Reverse recovery energy(T _{vj} = 25°C)		---	82	---	μJ
	Reverse recovery energy(T _{vj} = 175°C)		---	141	---	μJ

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

Typical Characteristics

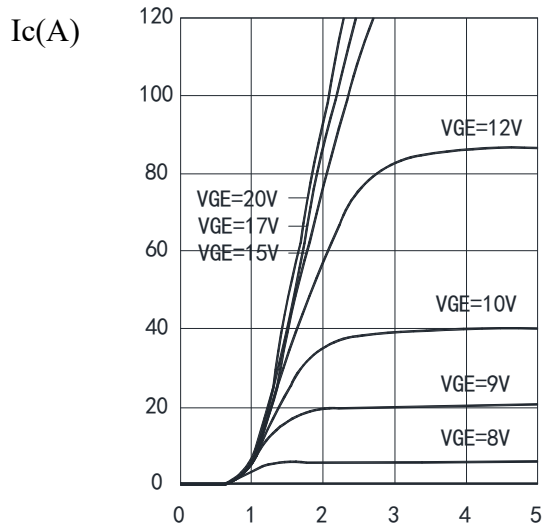


Fig. 1 Typical Output Characteristic ($T_c = 25^\circ\text{C}$)

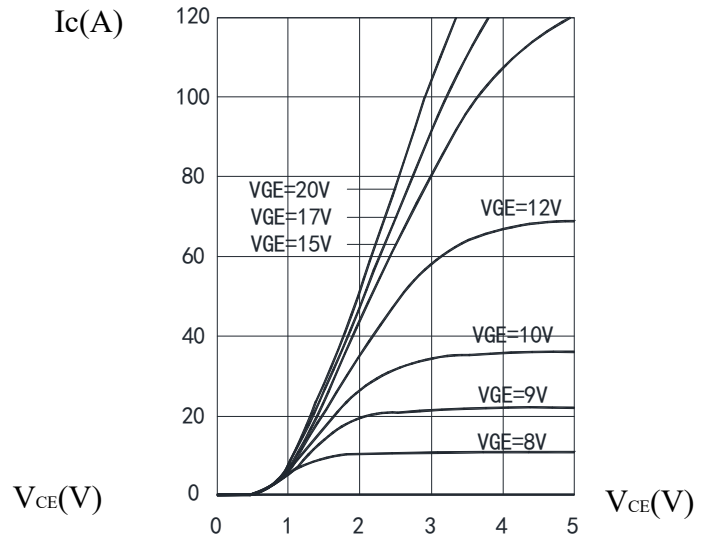


Fig. 2 Typical Output Characteristic ($T_c = 175^\circ\text{C}$)

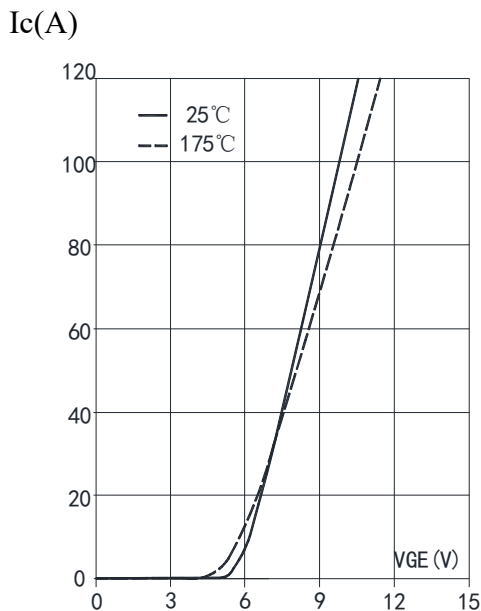


Fig. 3 Typical transfer characteristic

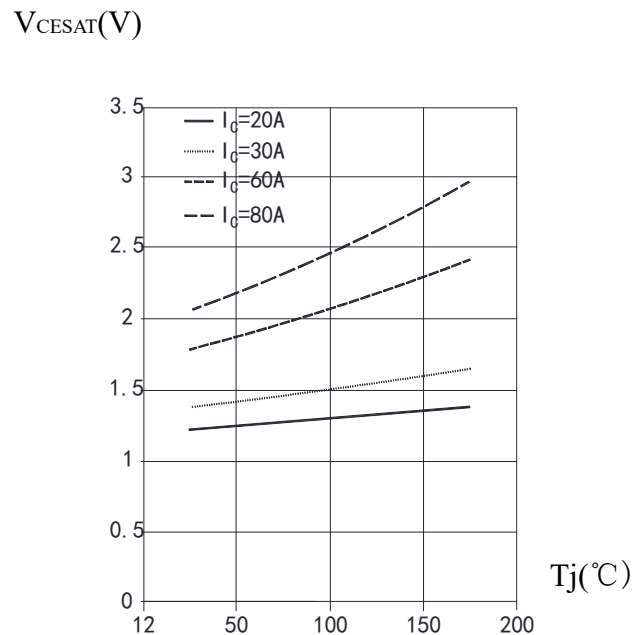


Fig. 4 Typical V_{CESAT} as T_j

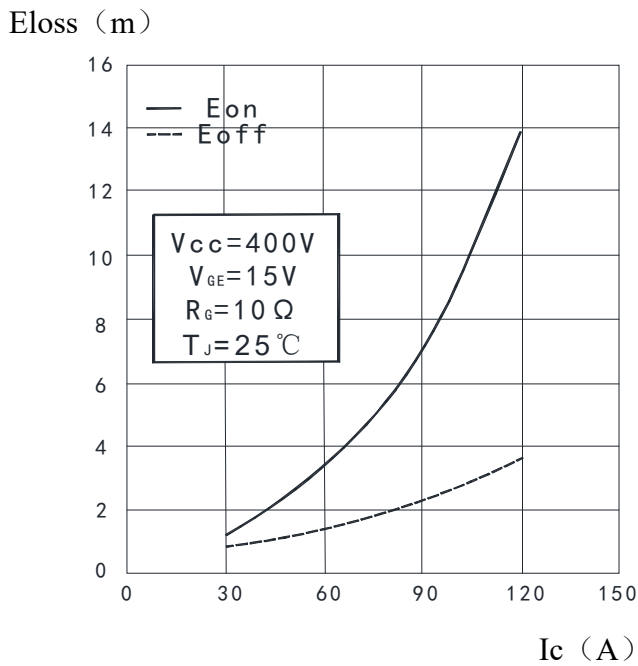


Fig. 5 Typical switching losses as Ic

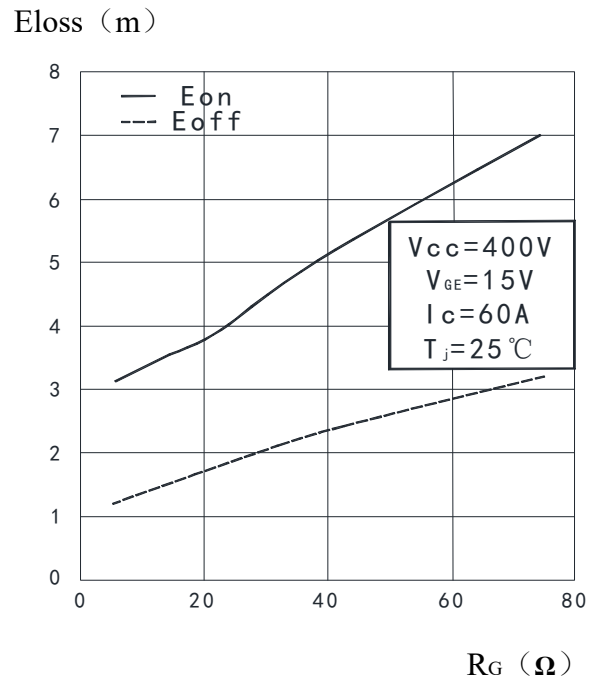


Fig. 6 Typical switching losses as RG

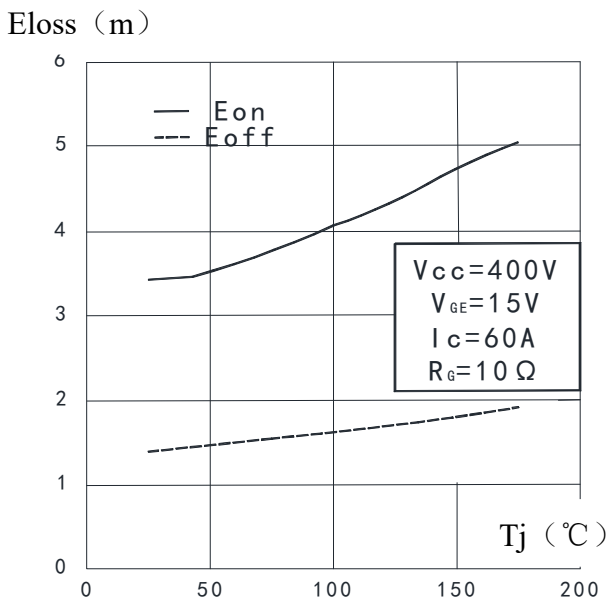


Fig. 7 Typical switching losses as Tj

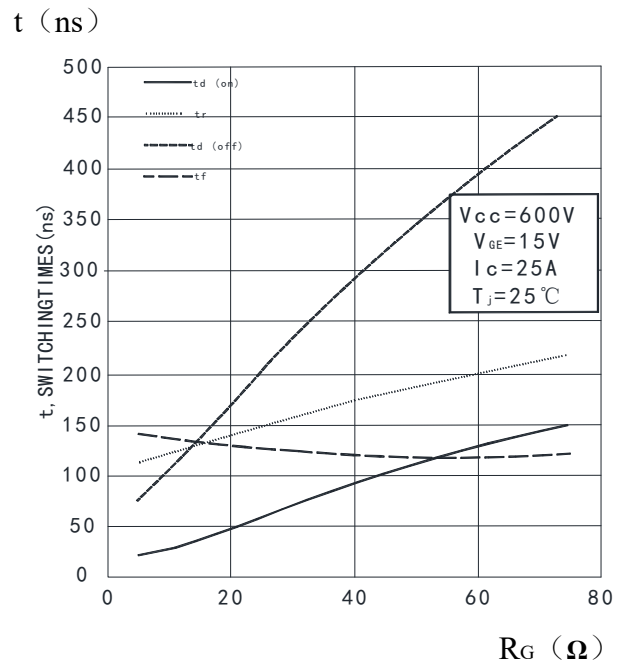


Fig. 8 Switching times as RG

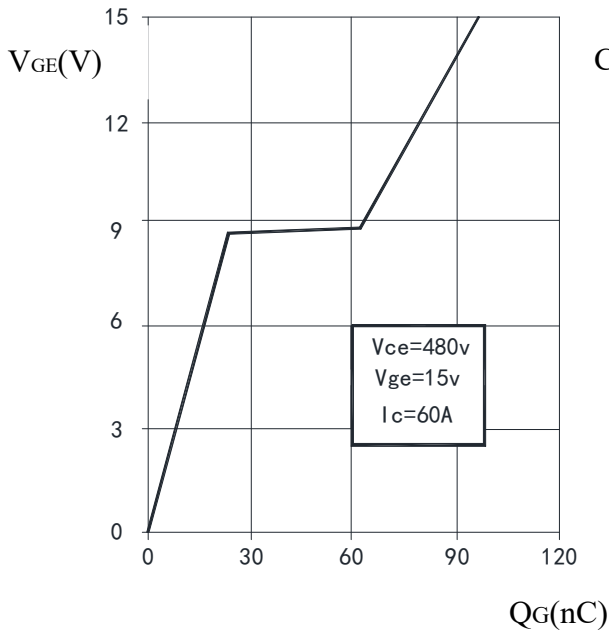


Fig. 5 Typical gate charge

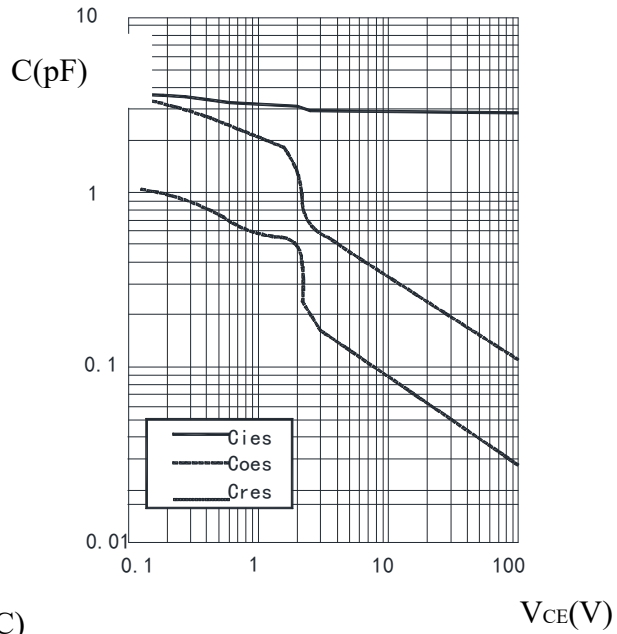


Fig. 6 Capacitance as a function of Vce

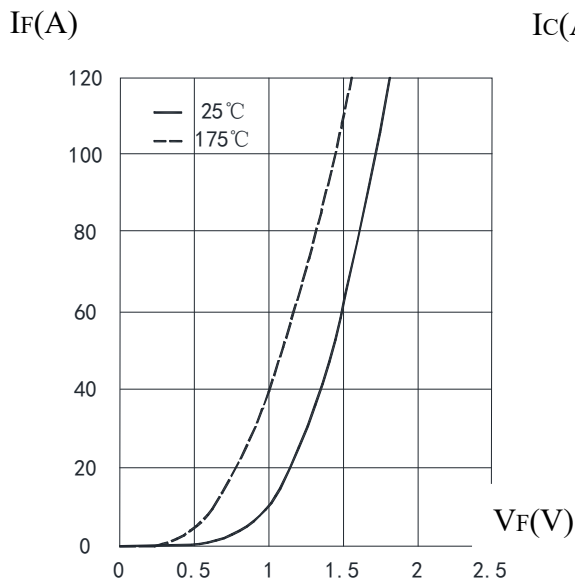


Fig. 7 Typical IF as a function of VF

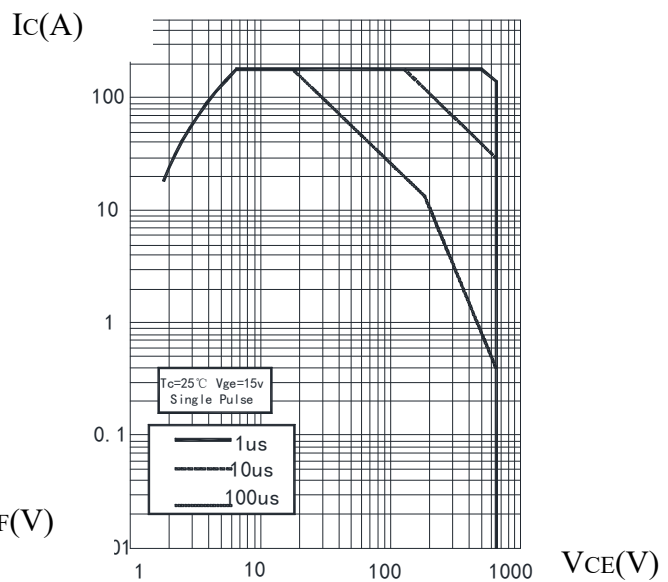


Fig. 8 Forward bias safe operating area



Trench Field-Stop Technology IGBT

PC60H065AB

REV:A / 0

● PART NO. SYSTEM :

P C 15 H 120 A C

