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DATA SHEET

PART NO. : PC15H065BA

REV : A / 0

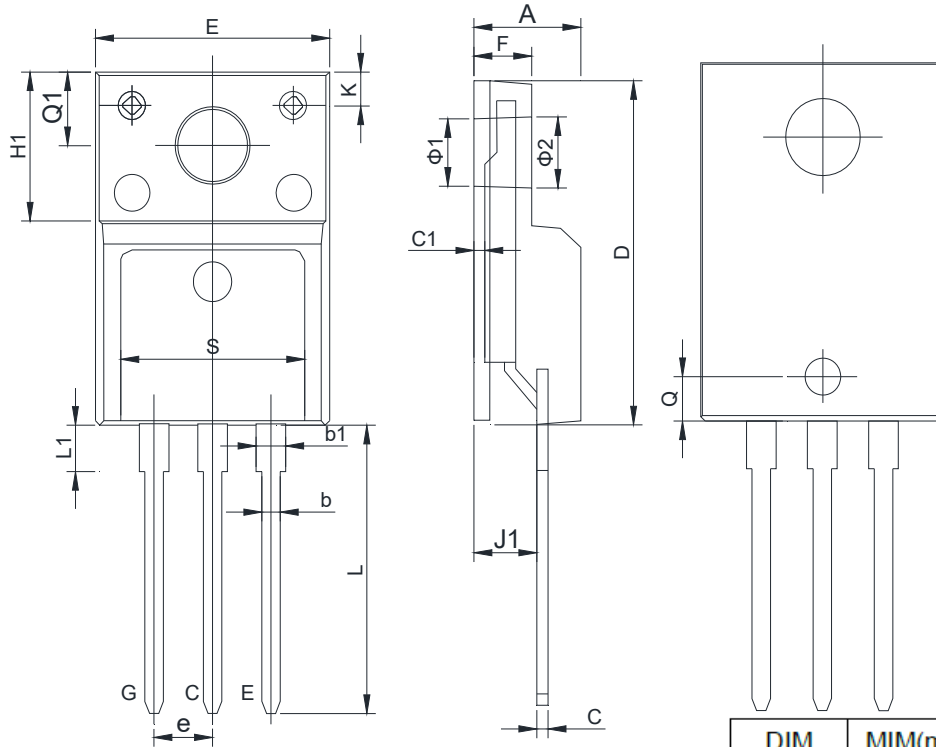
CUSTOMER'S APPROVAL : _____ DCC : _____

DRAWING NO. : DS-91P-22-0016

DATE : 2023-06-07

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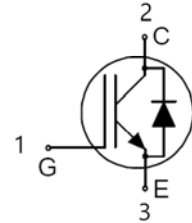
Package Dimensions



DIM	MIM(mm)	MAX(mm)
A	4.53	4.93
b	0.71	0.91
b1	1.15	1.39
C / C1	0.45	0.6
D	15.67	16.07
E	9.96	10.36
F	2.34	2.74
H1	6.5	6.9
J	0.32	0.43
J1	2.56	2.96
K	1.9	2.1
e	2.54 BSC	
Q	1.9	2.1
Q1	3.1	3.5
S	7.9	8.1
L	12.78	13.18
L1	1.9	2.3
Ø1	3.08	3.28
Ø2	3.35	3.55

Features

- Advanced Trench+FS IGBT technology
- Low Collector-Emitter Saturation voltage
- With anti-parallel fast recovery diode
- Maximum junction temperature: $T_J = 175\text{ }^\circ\text{C}$



Applications

Motor control

Key Performance and Package Parameters

V_{CE}	I_C	$V_{CESAT}, T_{vj}=25^\circ\text{C}$	T_{vjmax}
650V	15A	1.7V	175°C



Maximum Ratings

Symbol	Parameter	Condition	Value	Unit
V_{CES}	Collector-to-emitter voltage	$T_{vj}=25^\circ\text{C}$	650	V
I_C	DC Collector current	$T_C = 25^\circ\text{C}$	30	A
		$T_C = 100^\circ\text{C}$	15	
$I_{CRM}^{(2)}$	Pulsed Collector current	$T_{vj}\leq 175^\circ\text{C}$	45	A
I_F	Diode continuous forward current	$T_C = 25^\circ\text{C}$	30	A
		$T_C = 100^\circ\text{C}$	15	
$I_{FRM}^{(2)}$	Diode pulsed current	$T_{vj}\leq 175^\circ\text{C}$	45	A
V_{GES}	Gate to emitter voltage	$T_{vj}=25^\circ\text{C}$	± 30	V
t_{sc}	Short circuit withstand time	$V_{GE}=15\text{V}, V_{CC}\leq 400\text{V}$ $T_{vj}=25^\circ\text{C}$	10	μs
P_{tot}	Power dissipation	$T_C = 25^\circ\text{C}$	38	W
T_{vj}	Operating Junction Temperature	-	-40~+ 175	$^\circ\text{C}$
T_{stg}	Storage Temperature Range	-	-50~ + 150	$^\circ\text{C}$

Pulse width limited by T_{vjmax}

Thermal Resistance

Symbol	Parameter	Max.Value	Unit
$R_{th(J-C)}$	IGBT thermal resistance Junction-to-Case	3.9	K/W
$R_{th(J-C)}$	FRD thermal resistance Maximum Junction-to-Case	5	K/W
$R_{th(J-A)}$	Thermal resistance Junction-to-Ambient	80	K/W



Trench Field-Stop Technology IGBT

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Static Electrical Characteristic

Symbol	Parameter	Test conditions	Value			Units
			Min	Typ	Max	
V(BR)CES	Collector - Emitter breakdown voltage	$V_{GE}=0V, I_c=0.2mA, T_{vj}=25^{\circ}C$	600	-	-	V
VCE(sat)	Collector-Emitter Saturation voltage	$V_{GE}=15V, I_c=15A, T_{vj}=25^{\circ}C$	-	1.7	2.1	V
		$V_{GE}=15V, I_c=15A, T_{vj}=175^{\circ}C$	-	2.3	-	
VGE(th)	Gate threshold voltage	$V_{GE}=V_{CE}, I_c=1.5mA, T_{vj}=25^{\circ}C$	4.6	5.5	6.3-	V
VF	Diode Forward Voltage	$V_{GE}=0V, I_F=15A, T_{vj}=25^{\circ}C$	-	1.4	2	V
		$V_{GE}=0V, I_F=15A, T_{vj}=175^{\circ}C$	-	1.3	-	
IGES	Gate to Emitter Leakage current	$V_{GE}=\pm 30V, V_{CE}=0V, T_{vj}=175^{\circ}C$	-	-	± 100	nA
ICES	Zero gate voltage collector current	$V_{CE}=600V, V_{GE}=0V, T_{vj}=25^{\circ}C$	-	-	50	μA
RGin	Integrated gate resistor	-	-	0	-	Ω

Dyanmic Recovery Characteristic

Symbol	Parameter	Test conditions	Value			Units
			Min	Typ	Max	
Cies	Input capacitance	$V_{GE}=0V, V_{CE}=25V, f=1MHz, T_{vj}=25^{\circ}C$	-	718	-	Pf
Coes	Output capacitance		-	37	-	
Cres	Reverse transfer capacitance		-	7	-	
Qg	Total gate charge	$I_c=15A, V_{CE}=480V, V_{GE}=15V, T_{vj}=25^{\circ}C$	-	25	-	nC
Qge	Gate to emitter charge		-	7	-	
Qgc	Gate to collector charge		-	12	-	
ISC	Short circuit collector current	$T_{vj}=25^{\circ}C, V_{CC}=400V, V_{GE}=15V$	-	64	-	A



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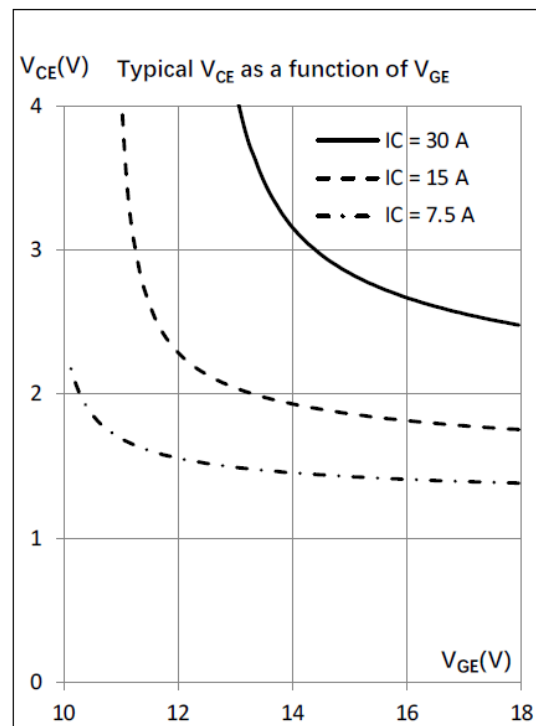
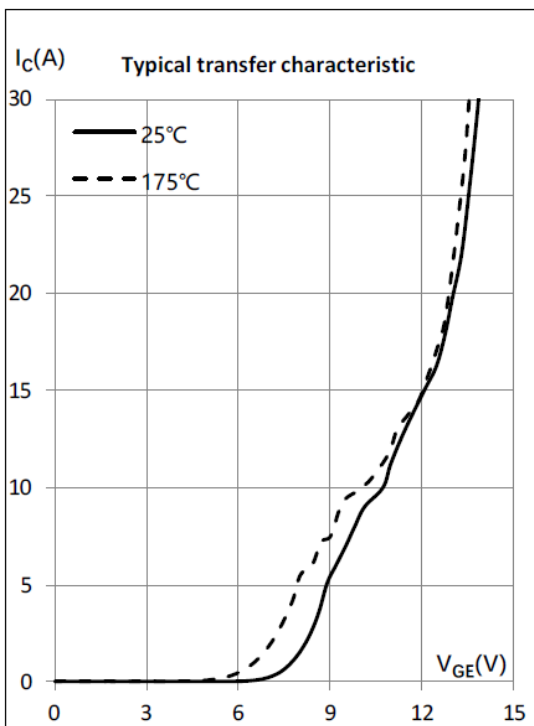
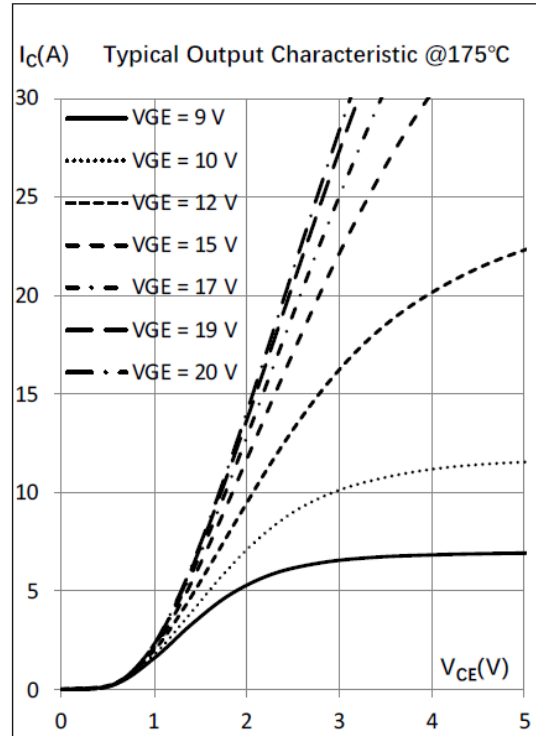
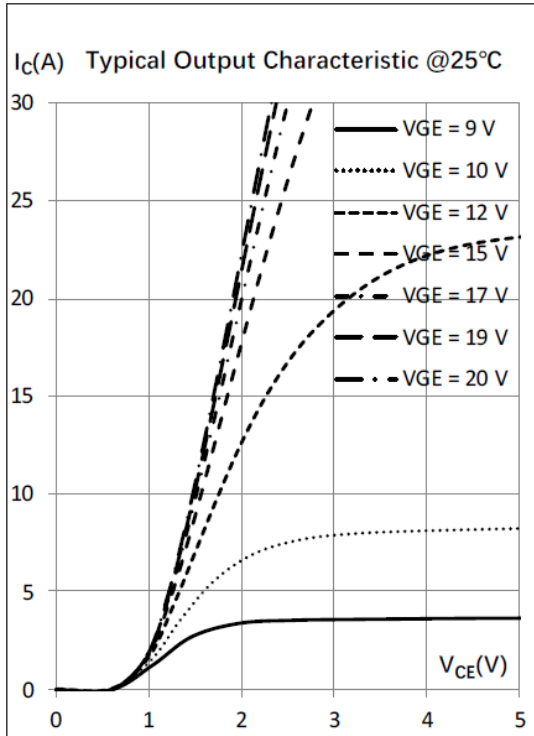
Switching Characteristic Inductive Load IGBT Characteristic

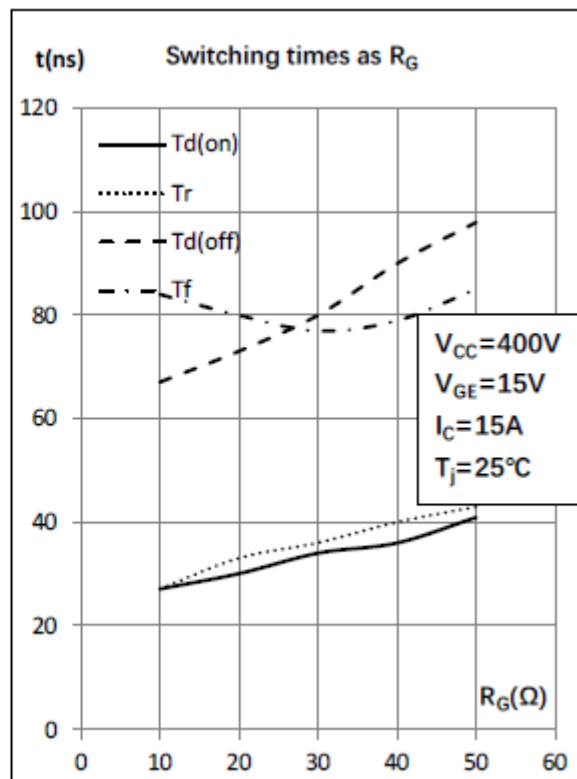
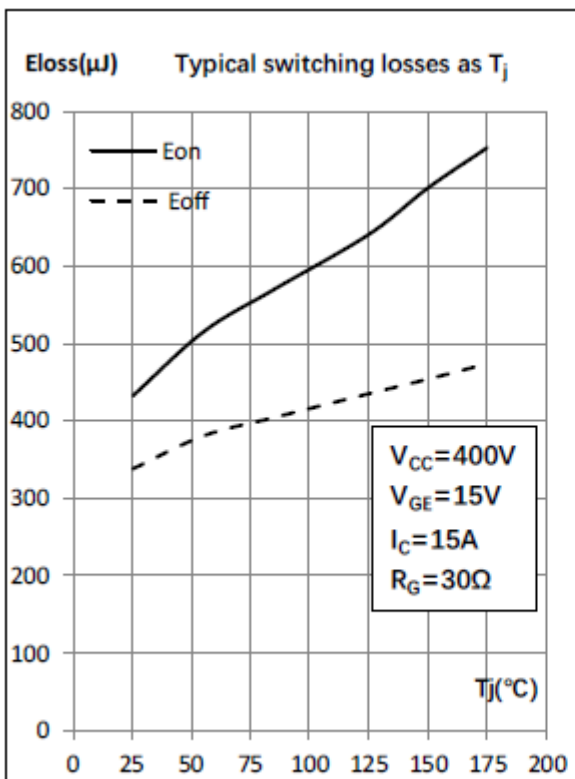
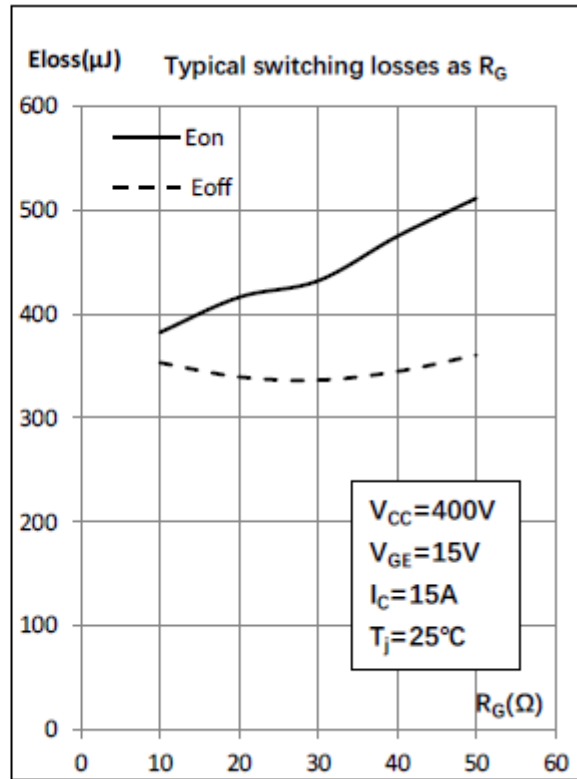
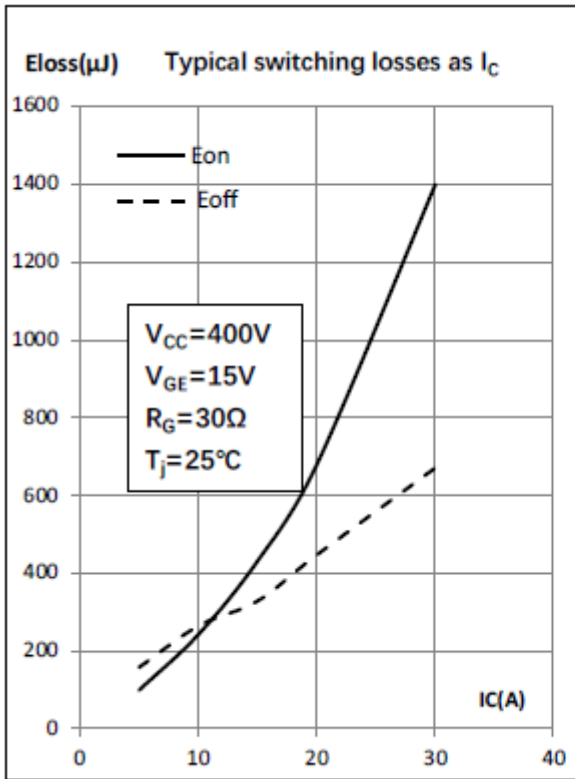
Symbol	Parameter	Test conditions	Value			Units	
			Min	Typ	Max		
Td(on)	Turn-On Delay Time	VCC=400V IC=15A RG(on)=30Ω RG(off)=30Ω C=0nF VGE=15V Lload=300μH	Tvj=25°C	-	32	-	ns
			Tvj=175°C	-	34	-	
Tr	Rise time		Tvj=25°C	-	36	-	ns
			Tvj=175°C	-	37	-	
Td(off)	Turn-Off Delay Time		Tvj=25°C	-	80	-	ns
			Tvj=175°C	-	101	-	
tf	Turn-Off Fall Time		Tvj=25°C	-	67	-	ns
			Tvj=175°C	-	76	-	
Eon	Turn-on switch loss		Tvj=25°C	-	432	-	μJ
			Tvj=175°C	-	653	-	
Eoff	Turn-off switch loss	Tvj=25°C	-	337	-	μJ	
		Tvj=175°C	-	374	-		

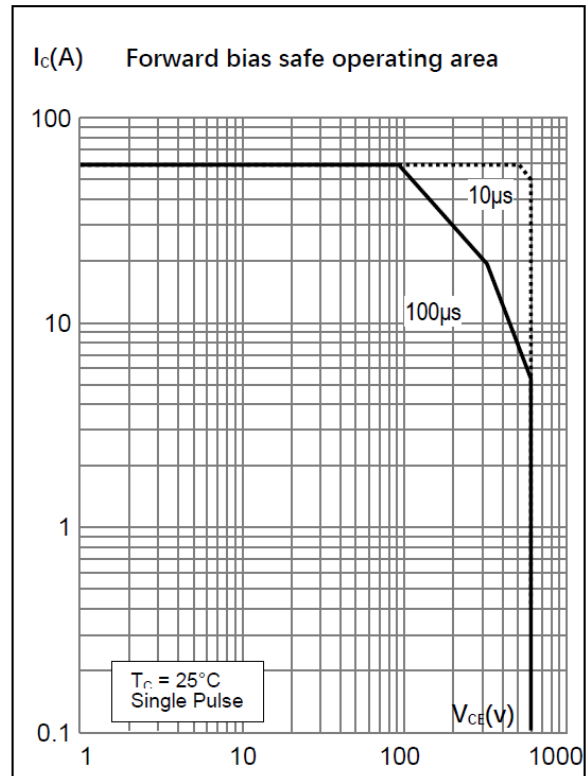
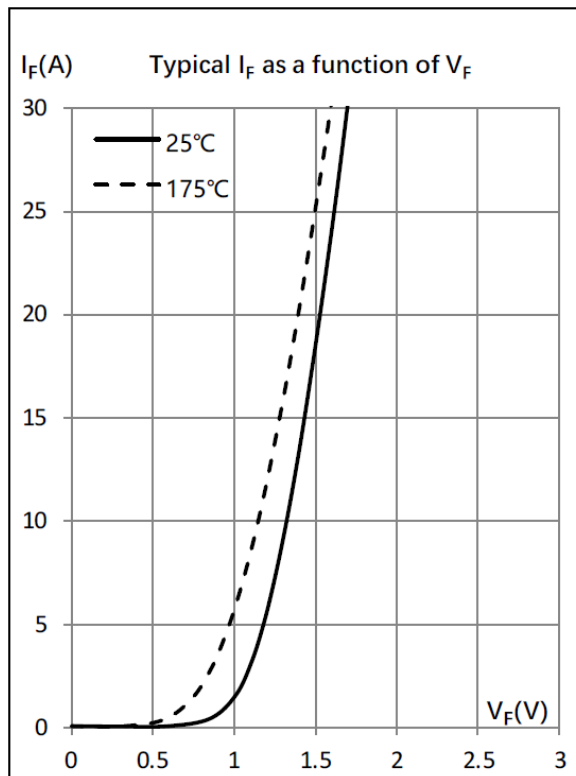
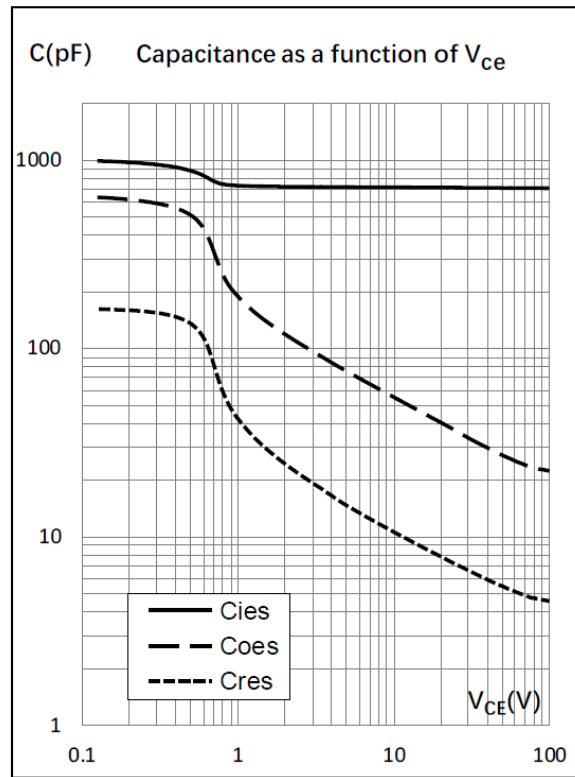
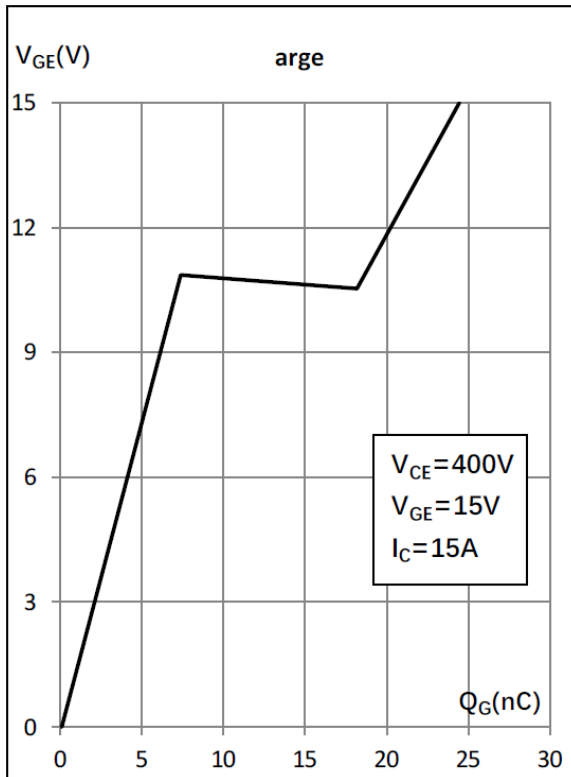
Diode Characteristic

Symbol	Parameter	Test conditions	Value			Units	
			Min	Typ	Max		
trr	Diode Reverse Recovery Time	IF = 15A VR=400V diF/dt=-200A/μs	Tvj=25°C	-	59	-	ns
			Tvj=175°C	-	144	-	
Qrr	Diode Reverse Recovery Charge		Tvj=25°C	-	340	-	μC
			Tvj=175°C	-	723	-	
Irrm	Peak reverse recovery current		Tvj=25°C	-	8	-	A
			Tvj=175°C	-	11	-	
dirr/dt	Peak rate of irr		Tvj=25°C	-	128	-	A/μs
			Tvj=175°C	-	127	-	
Erec	Diode Reverse Recovery loss		Tvj=25°C	-	54	-	μJ
			Tvj=175°C	-	165	-	

Characteristic Curve









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● PART NO. SYSTEM :

P C 15 H 120 A C

