IGW15T120F

General Description:

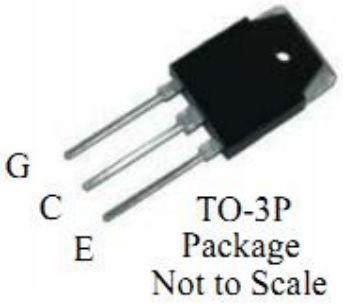
Using advanced IGBT technology, the 1200V IGBT. Offers superior conduction and switching performances.

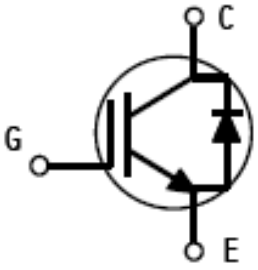
Lead Free Package and Finish

V_{CES}	$V_{CE(sat)}$	I_C
1200V	2.0V	15A

Features:

- Low saturation voltage: $V_{CE(sat)}$,typ=2.0V @I_C=15A, and T_C = 25°C;
- RoHS Compliant;





Applications:

- Power switch circuit of induction cooker(IH)

Ordering Information

Part Number	Package	Brand
IGW15T120F	TO-3P	***IPS***

Absolute Maximum Ratings（Ta= 25℃，unless otherwise specified）

Symbol	Parameter	Rating	Units
V_{CES}	Collector-Emitter Voltage	1200	V
V_{GES}	Gate- Emitter Voltage	±20	V
I_C	Collector Current	30	A
	Collector Current @T_C=100℃	15	
I_{CM}[a1]	Pulsed Collector Current @T_C=25℃	45	A
I_F	Diode Continuous Forward Current@T_C=100℃	15	A
I_{FM}	Diode Maximum Forward Current	45	A
P_D	Power Dissipation @T_C=25℃	160	W
	Power Dissipation @T_C=100℃	65	
T_J	Operating Junction	150	℃
T_{stg}	Storage Temperature Range	-55～150	℃
T_L	Maximum Temperature for Soldering	300	℃

a1：Repetitive rating; pulse width limited by maximum junction temperature

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction to case for IGBT	0.55	0.8	℃/W
$R_{\theta JC}$	Thermal Resistance, Junction to case for Diode	1.0	2	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	35	40	℃/W

Electrical Characteristics of the IGBT (T_a= 25℃, unless otherwise specified)

Symbol	Parameter	Test Conditions	Rating			Units
			Min	Typ.	Max.	
OFF Characteristics						
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage	V_{GE}=0V,I_{CE}=250uA	1200	--	--	V
I_{CES}	Collector-Emitter Leakage Current	V_{GE}=0V,V_{CE}=1200V	--	--	1.0	mA
$I_{GES(F)}$	Gate to Emitter Forward Leakage	V_{GE}=+20V	--	--	+250	nA
$I_{GES(R)}$	Gate to Source Reverse Leakage	V_{GE} =-20V	--	--	-250	nA
ON Characteristics						
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=15A ,V_{GE}=15V	--	2.0	2.5	V
$V_{GE(th)}$	Gate Threshold Voltage	I_C=250uA ,V_{CE}=V_{GE}	4.5	6.0	7.5	V
Pulse width tp≤300μs,δ≤2%						
Dynamic Characteristics						
C_{ies}	Input Capacitance	V_{CE}=30V,V_{GE}=0V f=1MHz	--	2485	--	pF
C_{oes}	Output Capacitance		--	51	--	
C_{res}	Reverse Transfer Capacitance		--	27.6	--	
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{CE}=600V,I_C=15A, R_g=10Ω,V_{GE}=15V, Inductive Load, Ta=25℃,	--	37	--	ns
t_r	Rise Time		--	25	--	
$t_{d(off)}$	Turn-Off Delay Time		--	90	--	
t_f	Fall Time		--	93	--	
E_{on}	Turn-On Switching Loss		--	0.9	--	mJ
E_{off}	Turn-Off Switching Loss		--	0.4	--	
E_{ts}	Total Switching Loss		--	1.3	--	
Q_g	Total Gate Charge	V_{CE}=600V,I_C=15A, V_{GE}=15V,	--	92	--	nC
Q_{ge}	Gate to Emitter Charge		--	25	--	
Q_{gc}	Gate to Collector Charge		--	37	--	
Electrical Characteristics of the Diode						
V_F	Diode Forward Voltage	I_F=15A	--	1.7	--	V
Trr	Reverse Recovery Time	I_F=15A di/dt=200A/uS	--	253	--	ns
Irr	Diode Peak Reverse Recovery Current		--	14	--	A
Qrr	Reverse Recovery Charge		--	1.8	--	nC

Characteristics Cure:

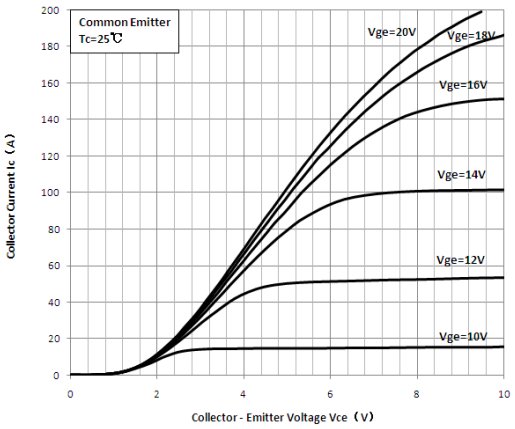


Figure 1. Saturation Voltage Characteristics

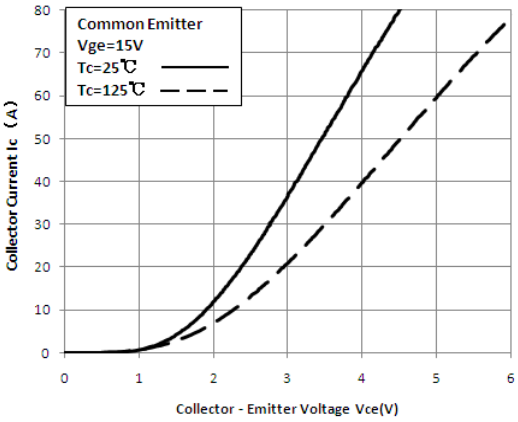


Figure 2. Saturation Voltage Characteristics

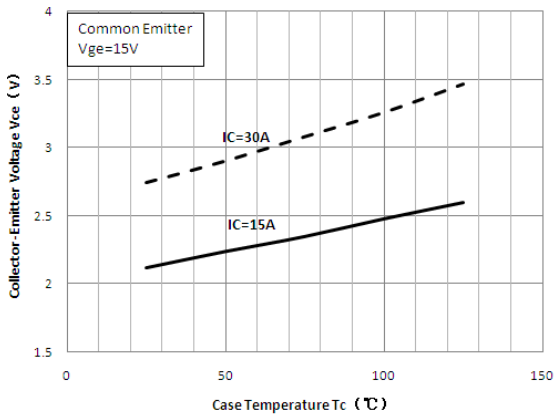


Figure 3. Saturation Voltage vs. Case Temperature

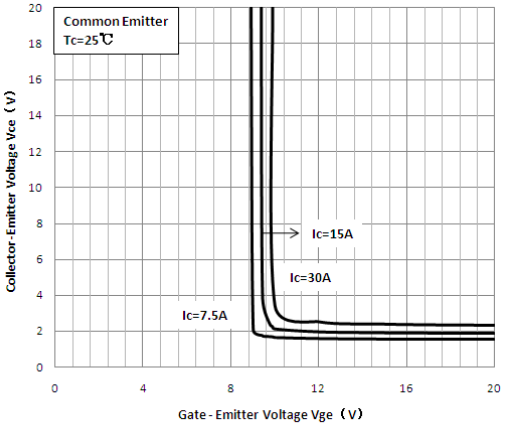


Figure 4. Saturation Voltage vs. VGE

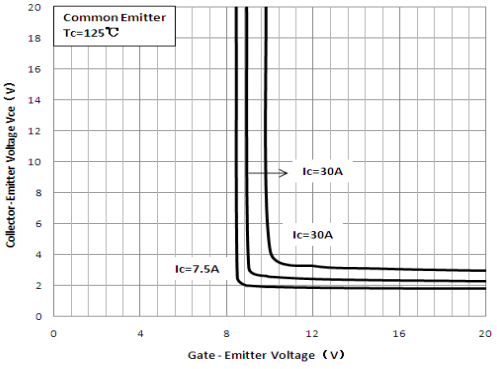


Figure 5. Saturation Voltage vs. VGE

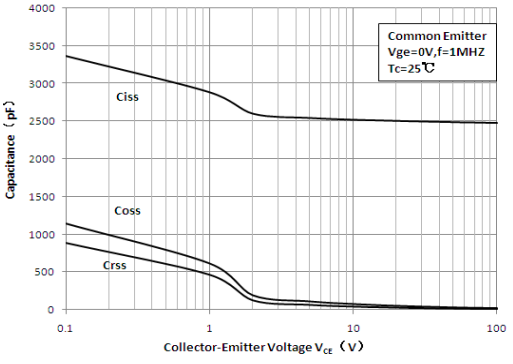


Figure 6. Capacitance Characteristics

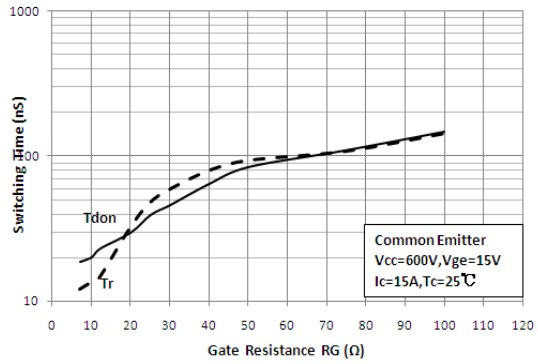


Figure 7. Turn-On Characteristics vs. Gate Resistance

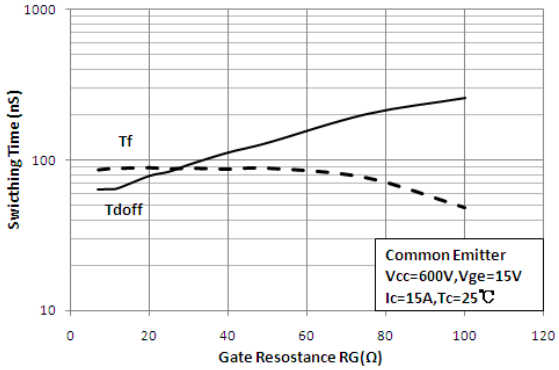


Figure 8. Turn-Off Characteristics vs. Gate Resistance

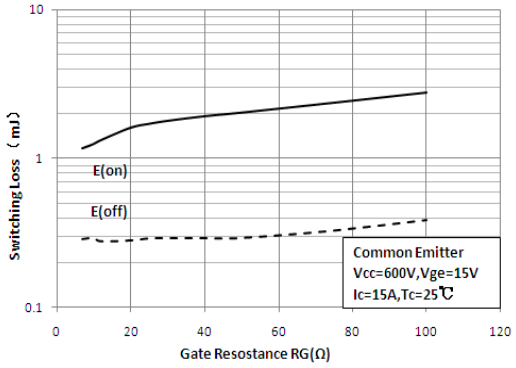


Figure 9. Switching Loss vs. Gate Resistance

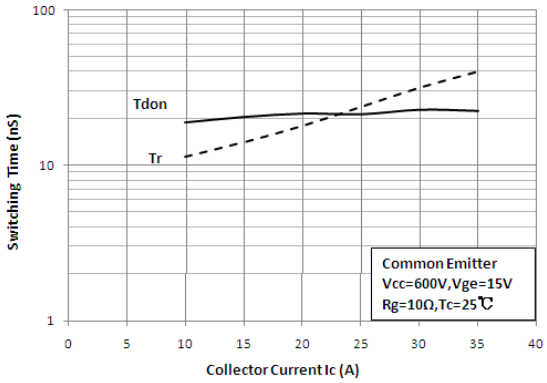


Figure 10. Turn-On Characteristics vs. Collector Current

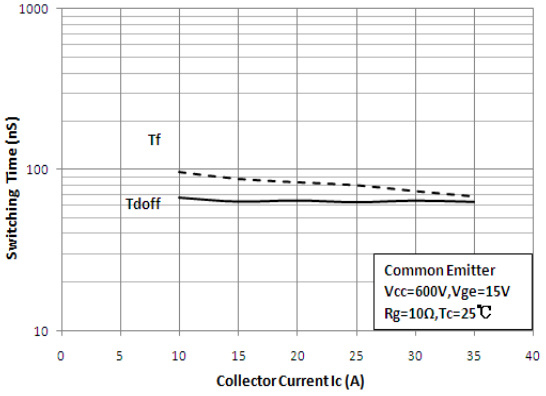


Figure 11. Turn-Off Characteristics vs. Collector Current

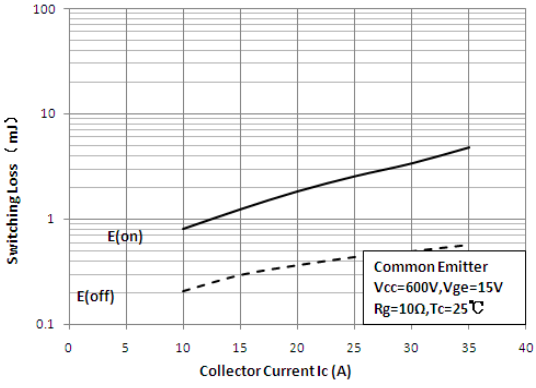


Figure 12. Switching Loss vs. Collector Current

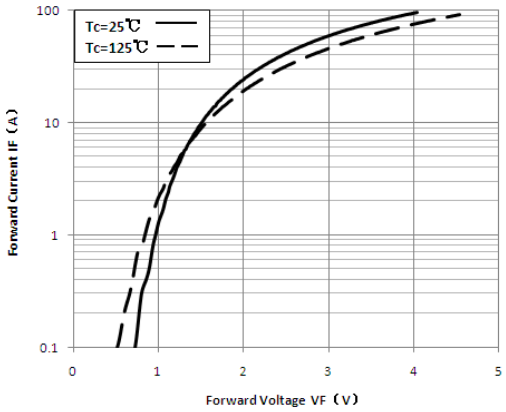


Figure 13. Forward Characteristics

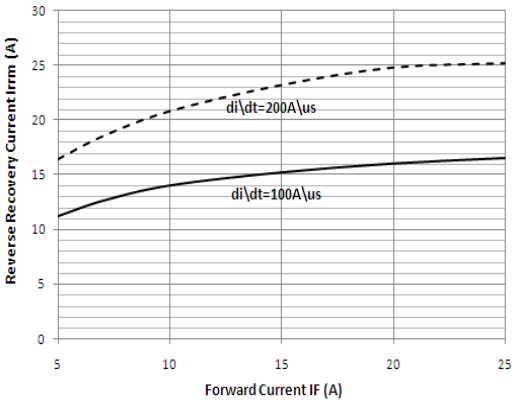


Figure 14. Reverse Recovery Current

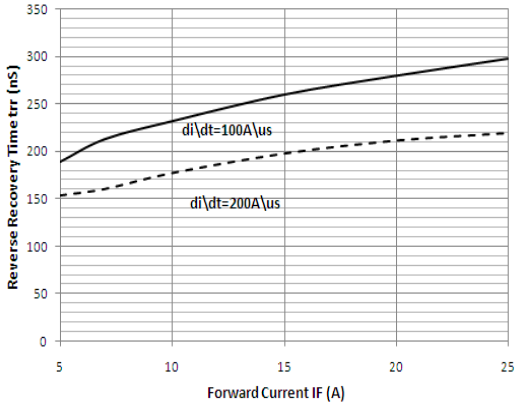


Figure 15. Reverse Recovery Time

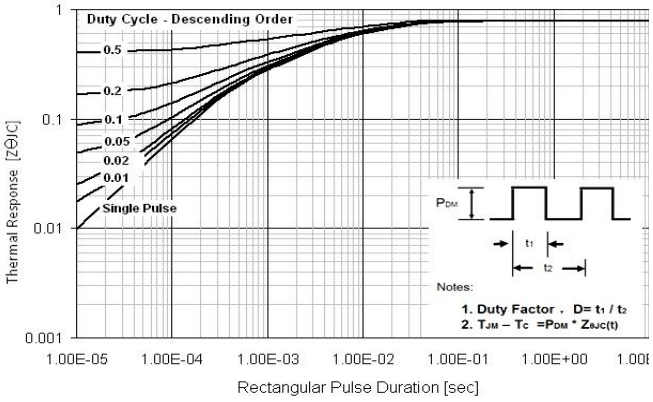


Figure 16. Transient Thermal Impedance of IGBT

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