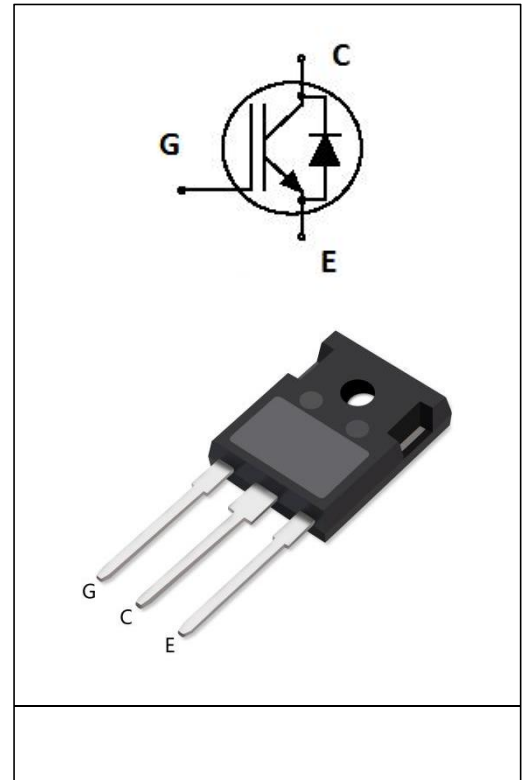


## Silicon Field Stop(FS) Planar IGBT

### Description

### General Features

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### Application

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### Product Summary


### MAXIMUM RATINGS

Collector- to- Emitter Voltage		$V_{CE}$	1200	V
Gate- to- Emitter Voltage		$V_{GE}$	± 30	V
Collector Current	$T_C=25$	$I_C$	30	A
	$T_C=100$		15	
Power Dissipation	$T_C=25$	$P_D$	300	W
	$T_C=100$		150	

Pulsed Collector Current	$T_C = 25$ $t_p = 10\mu s$ (Note 1)	$I_{CM}$	45	A
Diode Forward Current	$T_C = 25$	$I_F$	30	
	$T_C = 100$		15	
Pulsed Diode Forward Current	$T_C = 25$ $t_p = 10\mu s$ (Note 1)	$I_{FM}$	45	
Short Circuit Withstand Time $V_{GE} = 15V, V_{CC} = 800V, T_C = 150$		$T_{SC}$	10	$\mu s$
Operating Junction and Storage Temperature Range		$T_J, T_{stg}$	-55 $T_o$ +175	$^{\circ}C$
Lead Temperature for Soldering Purposes		$T_L$	270	

### THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Case for IGBT	$R_{thJC}$	0.5	/W
Thermal Resistance, Junction-to-Ambient	$R_{thJA}$	62.5	

### ELECTRICAL CHARACTERISTICS

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### OFF CHARACTERISTICS

Collector-to-Emitter Breakdown Voltage	$BV_{CES}$	1200	-	-	V	$V_{GE} = 0V, I_C = 1mA$
Zero Gate Voltage Collector Current	$I_{CES}$	-	-	40	$\mu A$	$V_{GE} = 0V, V_{CE} = V_{CES}$
Gate-to-Emitter leakage Current	$I_{GES}$	-	-	$\pm 400$	nA	$V_{GE} = \pm 30V, V_{CE} = 0V$

### ON CHARACTERISTICS

Gate-to-Emitter Threshold Voltage	$V_{GE(th)}$	4.8	-	6.6	V	$V_{GE} = V_{CE}, I_C = 1mA, T_J = 25$
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	-	2.3	2.8	V	$V_{GE} = 15V, I_C = 15A, T_J = 25$

**DYNAMIC CHARACTERISTICS**

Input Capacitance	$C_{IES}$	-	1213	-	pF	$V_{CE} = 15\text{ V}, V_{GE} = 0\text{ V},$ $f = 1\text{ MHz}$
Output Capacitance	$C_{OES}$	-	81	-		
Reverse Transfer Capacitance	$C_{RES}$	-	29	-		
Total Gate Charge	$Q_G$	-	80	-	nC	$V_{CE} = 600\text{ V}, V_{GE} = 15\text{ V},$ $I_C = 15\text{ A}$

**SWITCHING CHARACTERISTICS**

Turn-On Delay Time	$t_{d(on)}$	-	85	-	ns	$V_{CE} = 600\text{ V}$ $V_{GE} = 0/15\text{ V}$ $I_C = 15\text{ A}$ $R_G = 30\ \Omega$ $T_J = 25$
Turn-Off Delay Time	$t_{d(off)}$	-	109	-		
Rise time	$t_r$	-	28	-		
Fall time	$t_f$	-	220	-		
Turn-On Switching Loss	$E_{on}$	-	3.0	-	mJ	
Turn-Off Switching Loss	$E_{off}$	-	0.4	-		
Total Switching Loss	$E_{ts}$	-	3.4	-		

**ELECTRICAL CHARACTERISTICS**

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**SWITCHING CHARACTERISTICS**
**DIODE CHARACTERISTICS**

Diode Forward Voltage	$V_F$	-	2.2	3.3	-	$I_F = 15\text{ A}, T_J = 25$
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**DIODE SWITCHING CHARACTERISTICS, INDUCTIVE LOAD**

Reverse Recovery Time	$t_{rr}$	-	30	-	ns	$V_R = 600\text{ V}, I_F = 15\text{ A},$ $dI_F/dt = 200\text{ A}/\mu\text{s}$ $T_J = 25$
Reverse Recovery Charge	$Q_{rr}$	-	2250	-	nC	
Reverse Recovery Energy	$E_{rec}$	-	0.02	-	mJ	
Peak Reverse Recovery Current	$I_{RRM}$	-	12	-	A	

## Typical Performance Characteristics

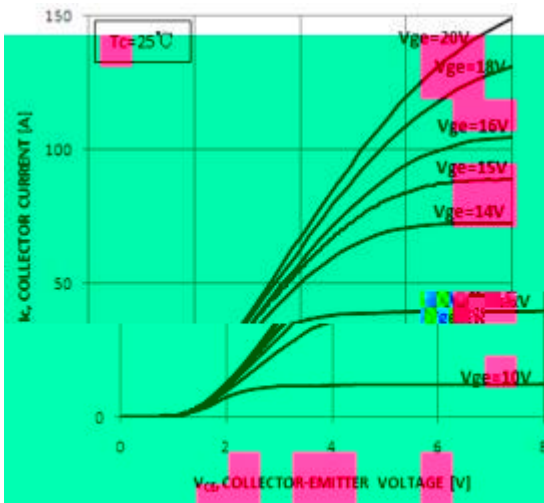


Figure 1. Typical Output Characteristics

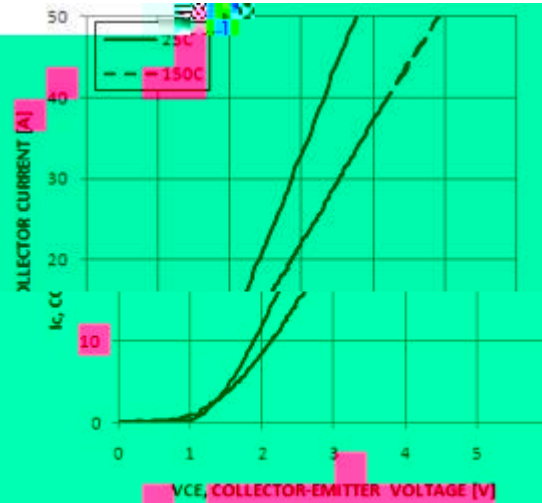


Figure 2. Typical Output Characteristics

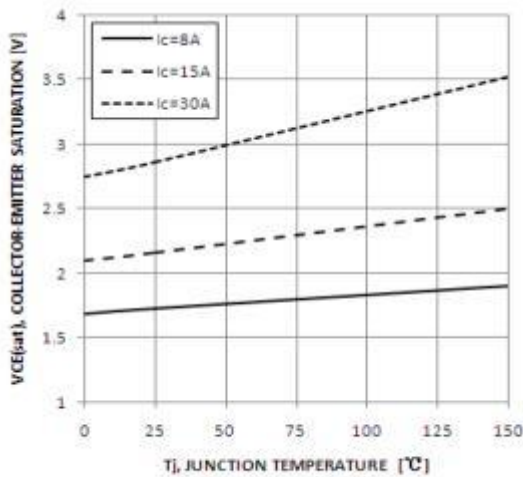


Figure 3. Typical Saturation Voltage vs. Junction Temperature

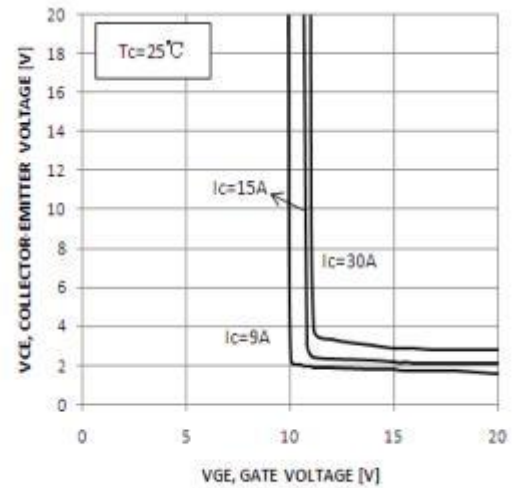


Figure 4. Typical Saturation Voltage vs. Gate- Emitter Voltage

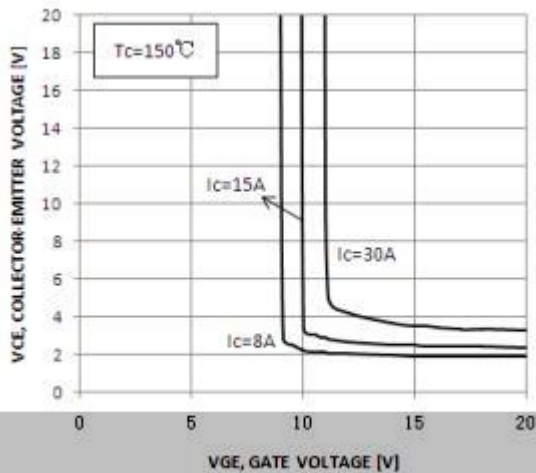


Figure 5. Typical Saturation Voltage vs. Gate-Emitter Voltage

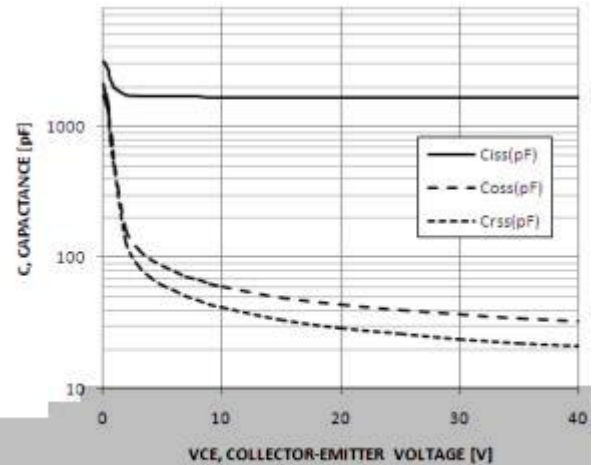


Figure 6. Typical Capacitance Characteristics

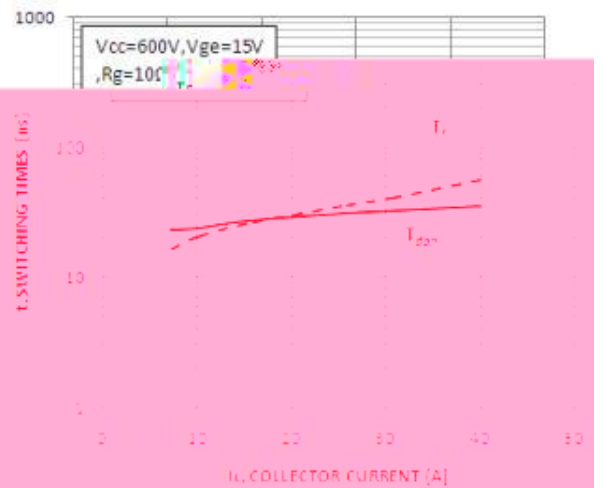
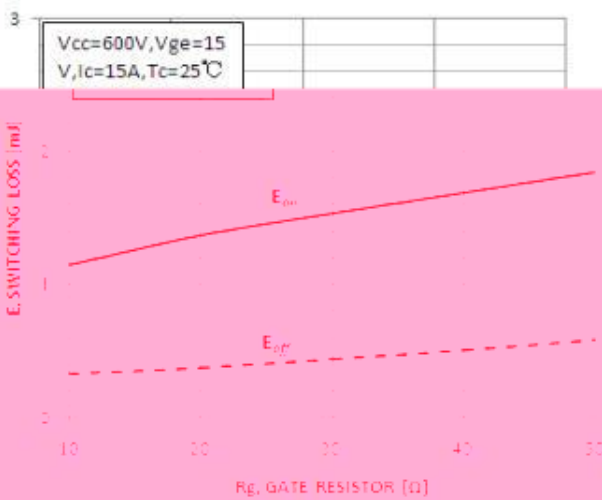
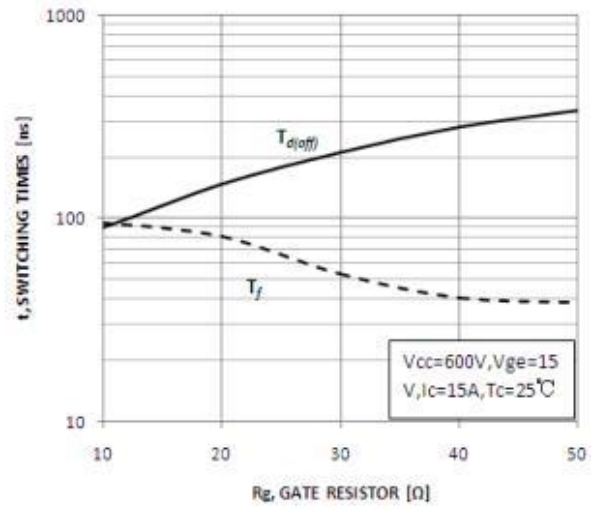
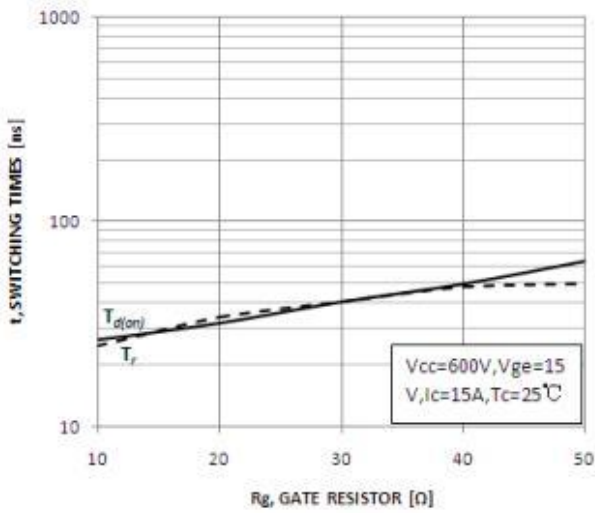


Figure 9. Typical Switching Losses vs. Gate Resistance

Figure 10. Typical Turn-On Characteristics vs. Collector Current

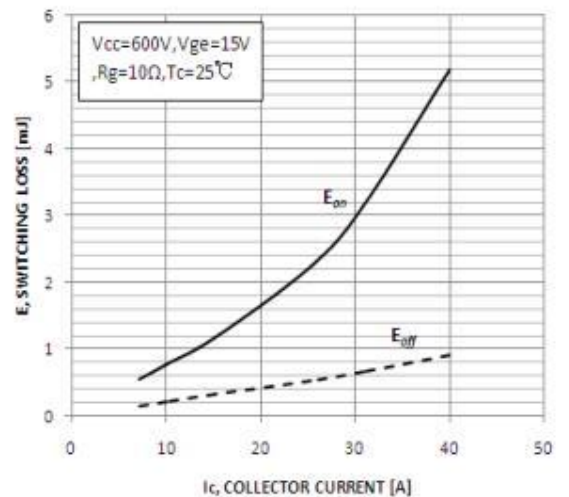
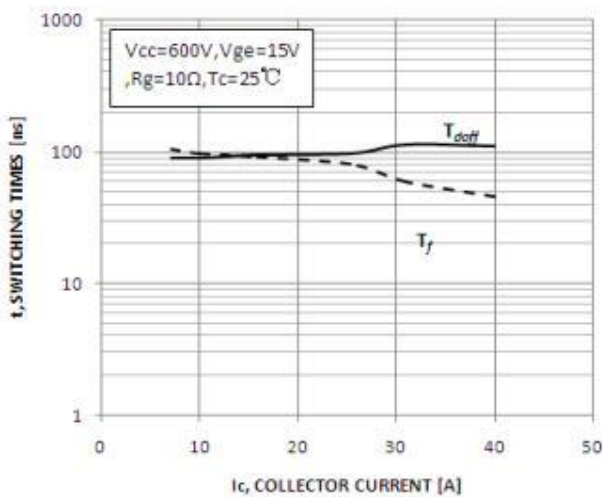


Figure 11. Typical Turn-Off Characteristics vs. Collector Current

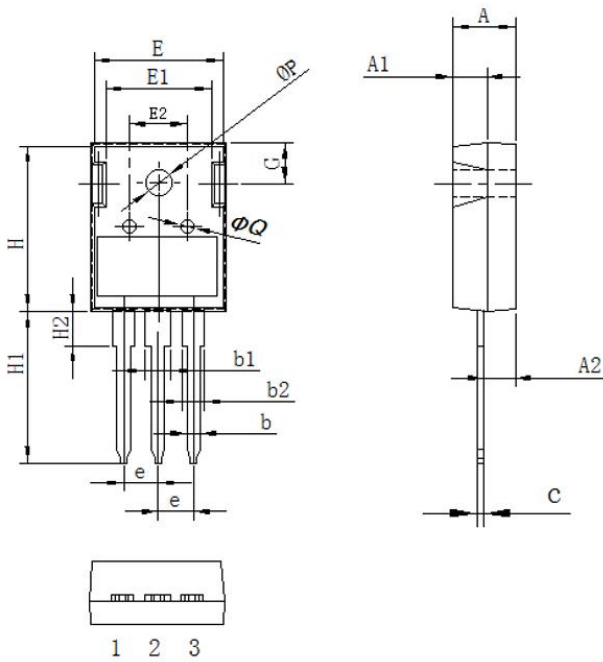
Figure 12. Typical Switching Losses vs. Collector Current

**THG15N120**

## Package Information

### TO-247H PACKAGE

### 基本尺寸



Symbol	单位 mm		
	Min	Nom	Max
A	4.80	5.00	5.20
A1	2.80	3.00	3.20
A2	2.20	2.40	2.60
b	1.05	1.20	1.35
b1	2.80	3.00	3.20
b2	1.80	2.00	2.20
c	0.50	0.60	0.70
e	5.35	5.45	5.75
E	15.6	15.80	16.0
E1	12.3	12.50	12.7
E2	6.00	6.20	6.40
H	20.5	21.0	21.5
H1	19.0	20.0	21.0
H2	3.00	4.00	5.00
ΦP	3.30	3.50	3.50
ΦQ	2.30	2.50	2.70

## Notice

-Headquarters