

# FGS15N40L

## General Description

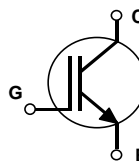
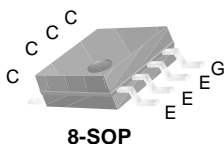
Insulated Gate Bipolar Transistors(IGBTs) with trench gate structure have superior performance in conduction and switching to planar gate structure and also have wide noise immunity. These devices are well suitable for strobe application

## Features

- High Input Impedance
- High Peak Current Capability (130A)
- Easy Gate Drive

## Application

- Strobe Flash



## Absolute Maximum Ratings T<sub>C</sub> = 25°C unless otherwise noted

Symbol	Description	FGS15N40L	Units
V <sub>CES</sub>	Collector-Emitter Voltage	400	V
V <sub>GES</sub>	Gate-Emitter Voltage	± 6	V
I <sub>CM (1)</sub>	Pulsed Collector Current	130	A
P <sub>C</sub>	Maximum Power Dissipation @ T <sub>a</sub> = 25°C	2.0	W
T <sub>J</sub>	Operating Junction Temperature	-40 to +150	°C
T <sub>stg</sub>	Storage Temperature Range	-40 to +150	°C
T <sub>L</sub>	Maximum Lead Temp. for soldering Purposes from case for 5 secnds	300	°C

### Notes :

(1) Repetitive rating : Pulse width limited by max. junction temperature

## Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Units
R <sub>θJA</sub>	Thermal Resistance, Junction-to-Ambient(PCB Mount)	--	62.5	°C/W

Notes: Mounted on 1" square PCB(FR4 or G-10 Material)

**Electrical Characteristics of IGBT**  $T_C = 25^\circ\text{C}$  unless otherwise noted

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
<b>Off Characteristics</b>						
$BV_{CES}$	Collector-Emitter Breakdown Voltage	$V_{GE} = 0V, I_C = 1mA$	450	--	--	V
$I_{CES}$	Collector Cut-off Current	$V_{CE} = V_{CES}, V_{GE} = 0V$	--	--	10	$\mu A$
$I_{GES}$	G-E leakage Current	$V_{GE} = V_{GES}, V_{CE} = 0V$	--	--	$\pm 0.1$	$\mu A$
<b>On Characteristics</b>						
$V_{GE(th)}$	G-E threshold Voltage	$I_C = 0V, I_C = 1mA$	-	-	1.4	V
$V_{CE(sat)}$	C-E Saturation Voltage	$I_C = 130A, V_{GE} = 4.0V$	2.0	4.5	8.0	V
<b>Dynamic Characteristics</b>						
$C_{ies}$	Input Capacitance	$V_{GE} = 0V, V_{CE} = 30V$ $f = 1MHz$	--	3800	--	pF
$C_{oes}$	Output Capacitance		--	45	--	pF
$C_{res}$	Reverse Transfer Capacitance		--	30	--	pF
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-On Delay Time	$V_{CC} = 300V, I_C = 130A$ $V_{GE} = 4.0V, R_G = 15\Omega *$ Resistive Load	--	0.15	--	us
$t_r$	Rise Time		--	1.5	--	us
$t_{d(off)}$	Turn-Off Delay Time		--	0.15	0.3	us
$t_f$	Fall Time		--	1.5	3.0	us

Notes : Recommendation of Rg Value :  $R_g \geq 15\Omega$

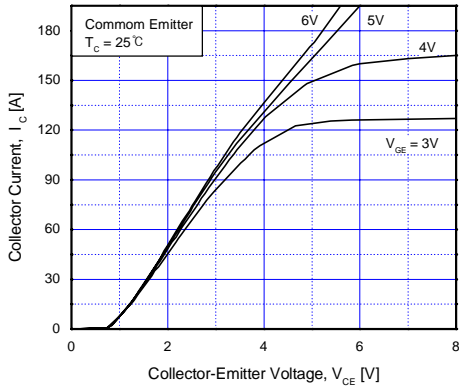


Fig 1. Typical Output Characteristics

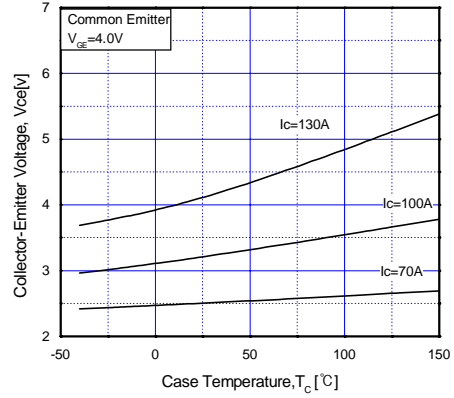


Fig 2. Saturation Voltage vs. Case Temperature at Variant Current Level

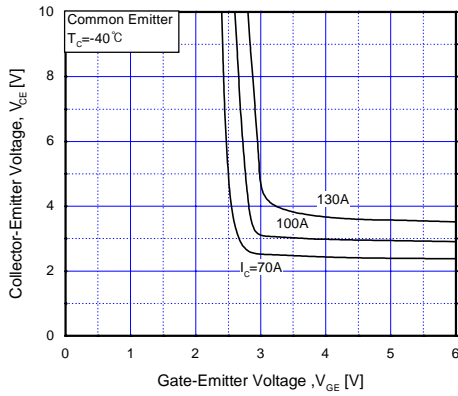


Fig 3. Saturation Voltage vs.  $V_{GE}$

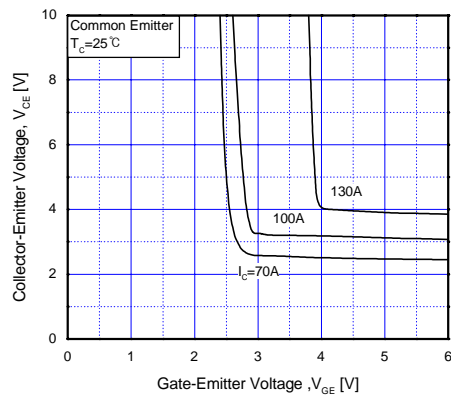


Fig 4. Saturation Voltage vs.  $V_{GE}$

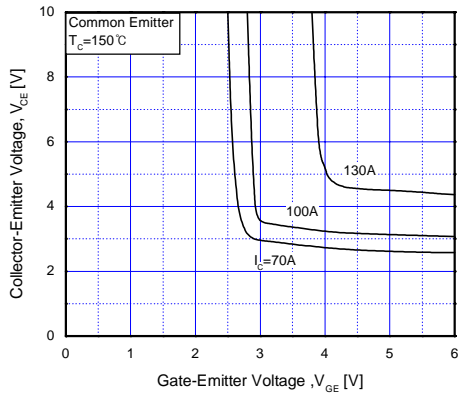


Fig 5. Saturation Voltage vs.  $V_{GE}$

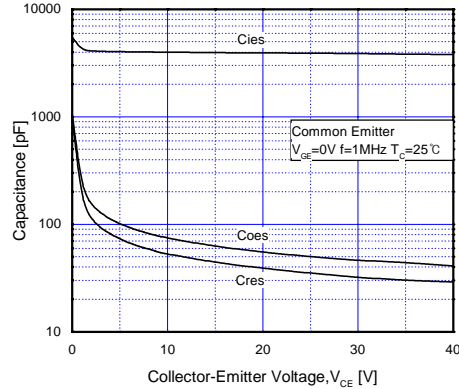
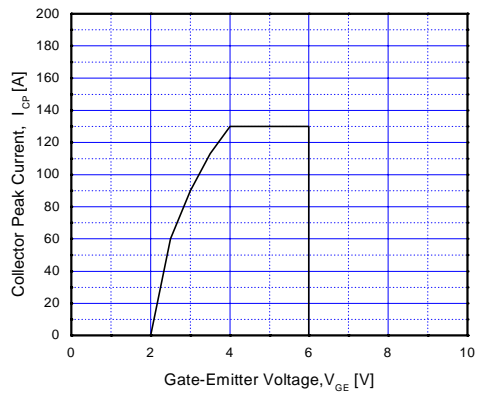


Fig 6. Capacitance Characteristics

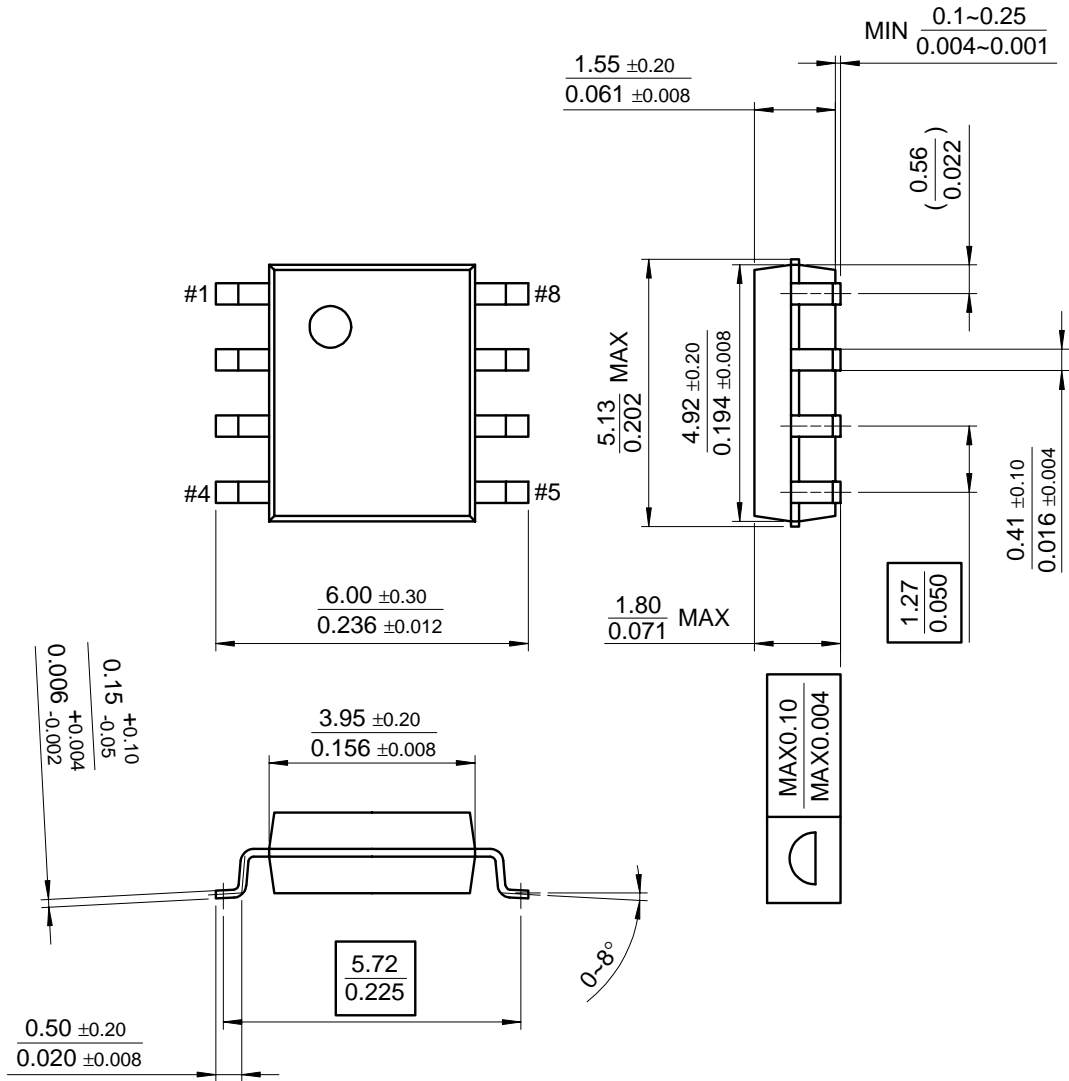


**Fig 7. Collector Current Limit Vs Gate - Emitter Voltage Limit**

Package Dimension

8-SOP

FGS15N40L



Dimensions in Millimeters

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DO <sup>ME</sup> <sup>TM</sup>	HiSeC <sup>TM</sup>	PowerTrench <sup>®</sup>	SuperSOT <sup>TM</sup> -8	
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