

FGS15N40L

General Description

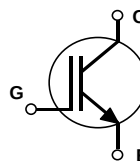
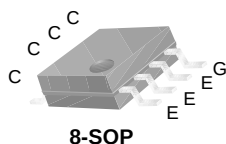
Insulated Gate Bipolar Transistors(IGBTs) with trench gate structure have superior performance in conductance and switching to planar gate structure and also have wide noise immunity. These devices are well suitable for strobe application

Features

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

Application

- Strobe Flash



Absolute Maximum Ratings

$T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Description	FGS15N40L	Units
V_{CES}	Collector-Emitter Voltage	400	V
V_{GES}	Gate-Emitter Voltage	± 6	V
$I_{CM(1)}$	Pulsed Collector Current	130	A
P_C	Maximum Power Dissipation @ $T_a = 25^\circ\text{C}$	2.0	W
T_J	Operating Junction Temperature	-40 to +150	$^\circ\text{C}$
T_{stg}	Storage Temperature Range	-40 to +150	$^\circ\text{C}$
T_L	Maximum Lead Temp. for soldering PurPoses from case for 5 secnds	300	$^\circ\text{C}$

Notes :

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

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient(PCB Mount)	--	62.5	$^\circ\text{C/W}$

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
Off Characteristics						
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	μA
I_{GES}	G-E leakage Current	$V_{GE} = V_{GES}, V_{CE} = 0V$	--	--	± 0.1	μA
On Characteristics						
$V_{GE(th)}$	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
Dynamic Characteristics						
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
Switching Characteristics						
$t_{d(on)}$	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 R_G Value : $R_G \geq 15\Omega$

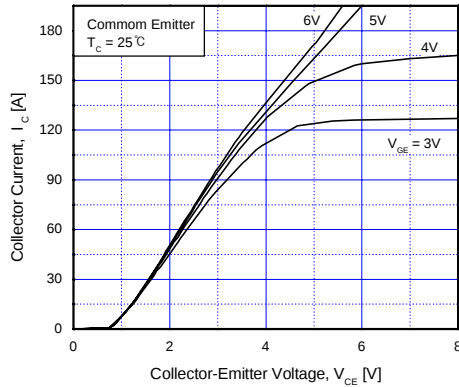


Fig 1. Typical Output Characteristics

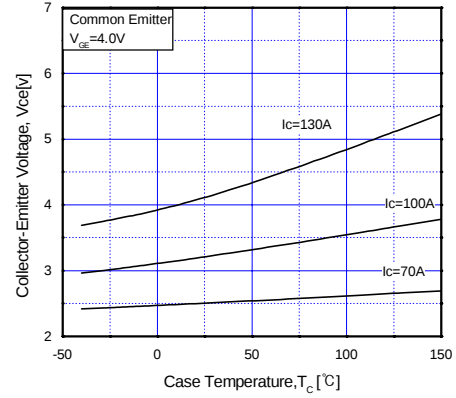


Fig 2. Saturation Voltage vs. Case Temperature at Variant Current Level

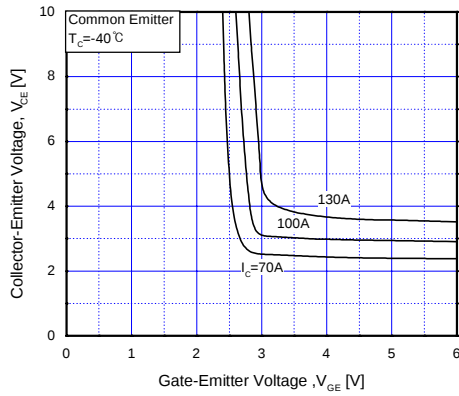


Fig 3. Saturation Voltage vs. V_{GE}

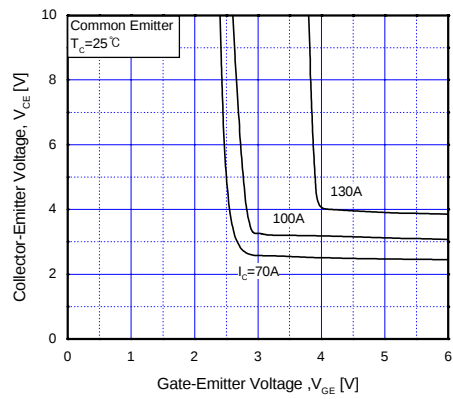


Fig 4. Saturation Voltage vs. V_{GE}

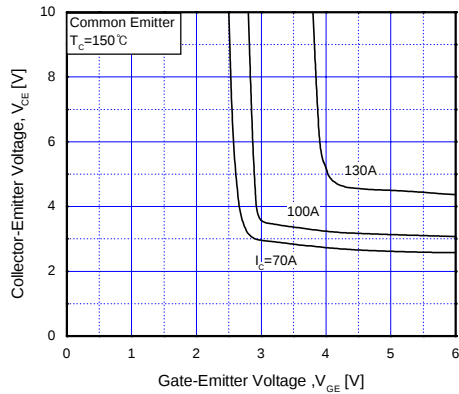


Fig 5. Saturation Voltage vs. V_{GE}

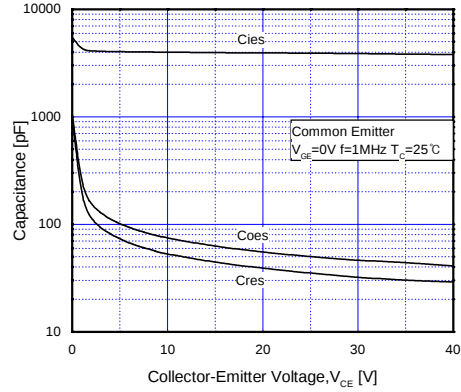


Fig 6. Capacitance Characteristics

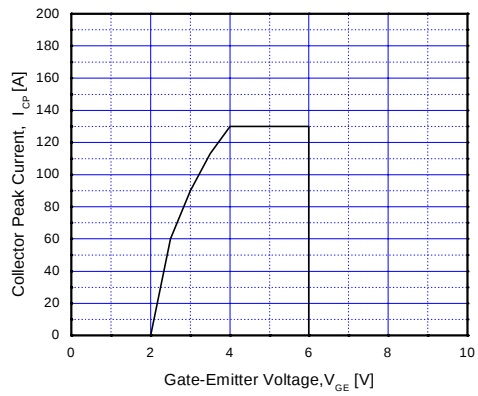


Fig 7. Collector Current Limit Vs Gate - Emitter Voltage Limit

The drawing illustrates the mechanical specifications of a 16-pin DIP package. The top view shows a rectangular body with a central circular feature and 16 pins (8 on each side). The side view shows the package height and pin dimensions. The cross-sectional view shows the internal structure and mounting features.

Top View Dimensions:

- Overall width: 6.00 ± 0.30 mm / 0.236 ± 0.012 inches
- Pin pitch (center-to-center): 0.15 ± 0.05 mm / 0.006 ± 0.002 inches
- Pin width: 0.15 ± 0.05 mm / 0.006 ± 0.002 inches
- Pin length: 0.15 ± 0.05 mm / 0.006 ± 0.002 inches
- Pin #1 to #4 distance: 3.95 ± 0.20 mm / 0.156 ± 0.008 inches
- Pin #5 to #8 distance: 3.95 ± 0.20 mm / 0.156 ± 0.008 inches

Side View Dimensions:

- Overall height: 1.55 ± 0.20 mm / 0.061 ± 0.008 inches
- Pin height: 0.56 ± 0.022 mm / 0.022 ± 0.001 inches
- Pin #1 to #4 distance: 5.13 ± 0.202 mm / 0.202 ± 0.008 inches
- Pin #5 to #8 distance: 5.13 ± 0.202 mm / 0.202 ± 0.008 inches
- Pin #1 to #8 distance: 10.26 ± 0.404 mm / 0.404 ± 0.016 inches
- Pin #1 to #16 distance: 10.26 ± 0.404 mm / 0.404 ± 0.016 inches
- Pin #1 to #1 distance: 1.80 ± 0.071 mm / 0.071 ± 0.003 inches
- Pin #16 to #16 distance: 1.80 ± 0.071 mm / 0.071 ± 0.003 inches

Cross-sectional View Dimensions:

- Overall width: 5.72 ± 0.225 mm / 0.225 ± 0.009 inches
- Pin #1 to #4 distance: 3.95 ± 0.20 mm / 0.156 ± 0.008 inches
- Pin #5 to #8 distance: 3.95 ± 0.20 mm / 0.156 ± 0.008 inches
- Pin #1 to #8 distance: 7.90 ± 0.40 mm / 0.311 ± 0.016 inches
- Pin #1 to #16 distance: 7.90 ± 0.40 mm / 0.311 ± 0.016 inches
- Pin #1 to #1 distance: 1.80 ± 0.071 mm / 0.071 ± 0.003 inches
- Pin #16 to #16 distance: 1.80 ± 0.071 mm / 0.071 ± 0.003 inches

Other Dimensions:

- Pin #1 to #4 distance: 0.15 ± 0.05 mm / 0.006 ± 0.002 inches
- Pin #5 to #8 distance: 0.15 ± 0.05 mm / 0.006 ± 0.002 inches
- Pin #1 to #8 distance: 0.15 ± 0.05 mm / 0.006 ± 0.002 inches
- Pin #1 to #16 distance: 0.15 ± 0.05 mm / 0.006 ± 0.002 inches
- Pin #1 to #1 distance: 0.15 ± 0.05 mm / 0.006 ± 0.002 inches
- Pin #16 to #16 distance: 0.15 ± 0.05 mm / 0.006 ± 0.002 inches

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