FAIRCHILD
SEMICONDUCTOR®

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IGBT

FGS15N40L

General Description

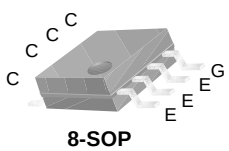
Insulated Gate Bipolar Transistors(IGBTs) with trench gate structure have superior performance in conductance and switching to planar gate structure and also have wide noise immunity. These devices are well suitable for strobe application

Features

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

Application

- Strobe Flash



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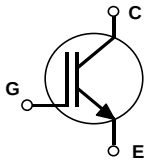

Absolute Maximum Ratings

T_C = 25°C unless otherrwise 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°C	2.0	W
T_J	Operating Junction Temperature	-40 to +150	°C
T_{stg}	Storage Temperature Range	-40 to +150	°C
T_L	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
$R_{\theta JA}$	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°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 = 15Ω ∗ 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 : Rg ≥ 15Ω

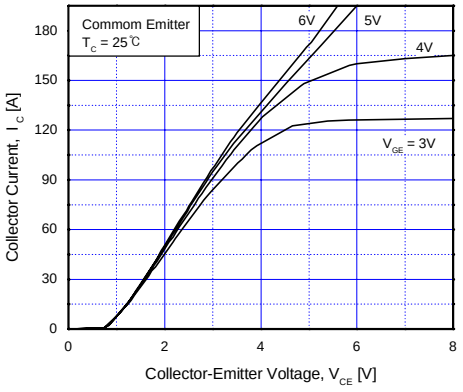

Fig 1. Typical Output Chacracteristics

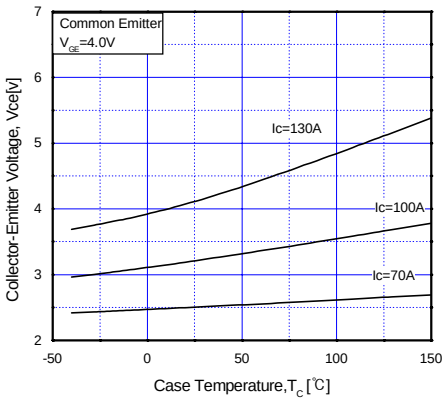

Fig 2. Saturation Voltage vs. Case Temerature at Variant Current Level

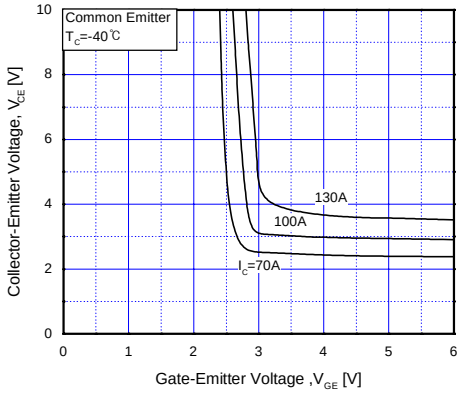

Fig 3. Saturation Voltage vs. V_{GE}

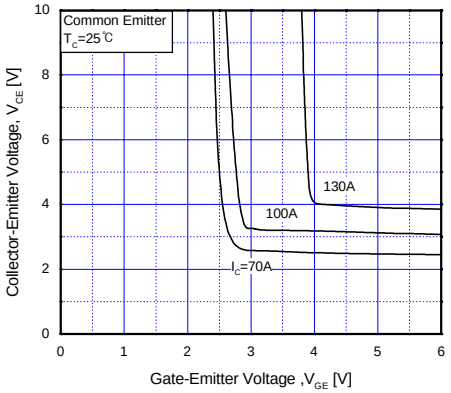

Fig 4. Saturation Voltage vs. V_{GE}

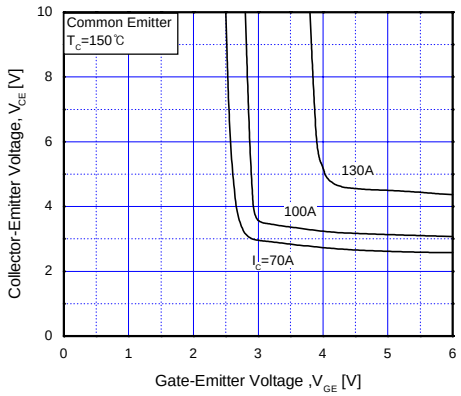

Fig 5. Saturation Voltage vs. V_{GE}

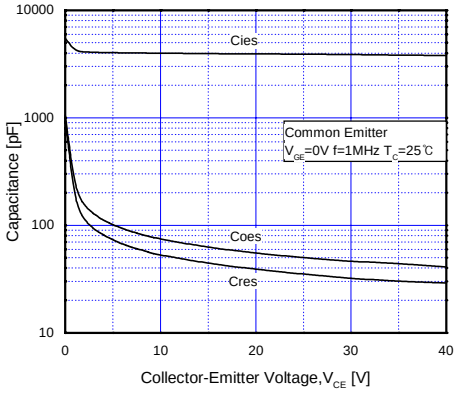

Fig 6. Capacitance Characteristics

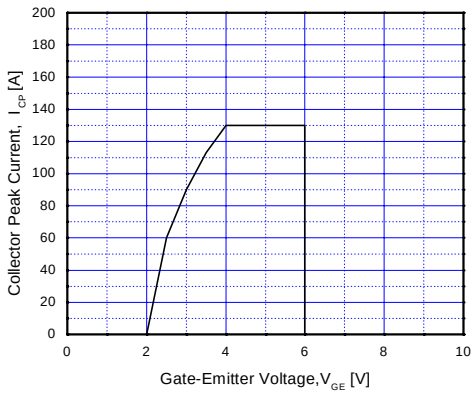

Fig 7. Collector Current Limit Vs Gate - Emitter Voltage Limit

Package Dimension

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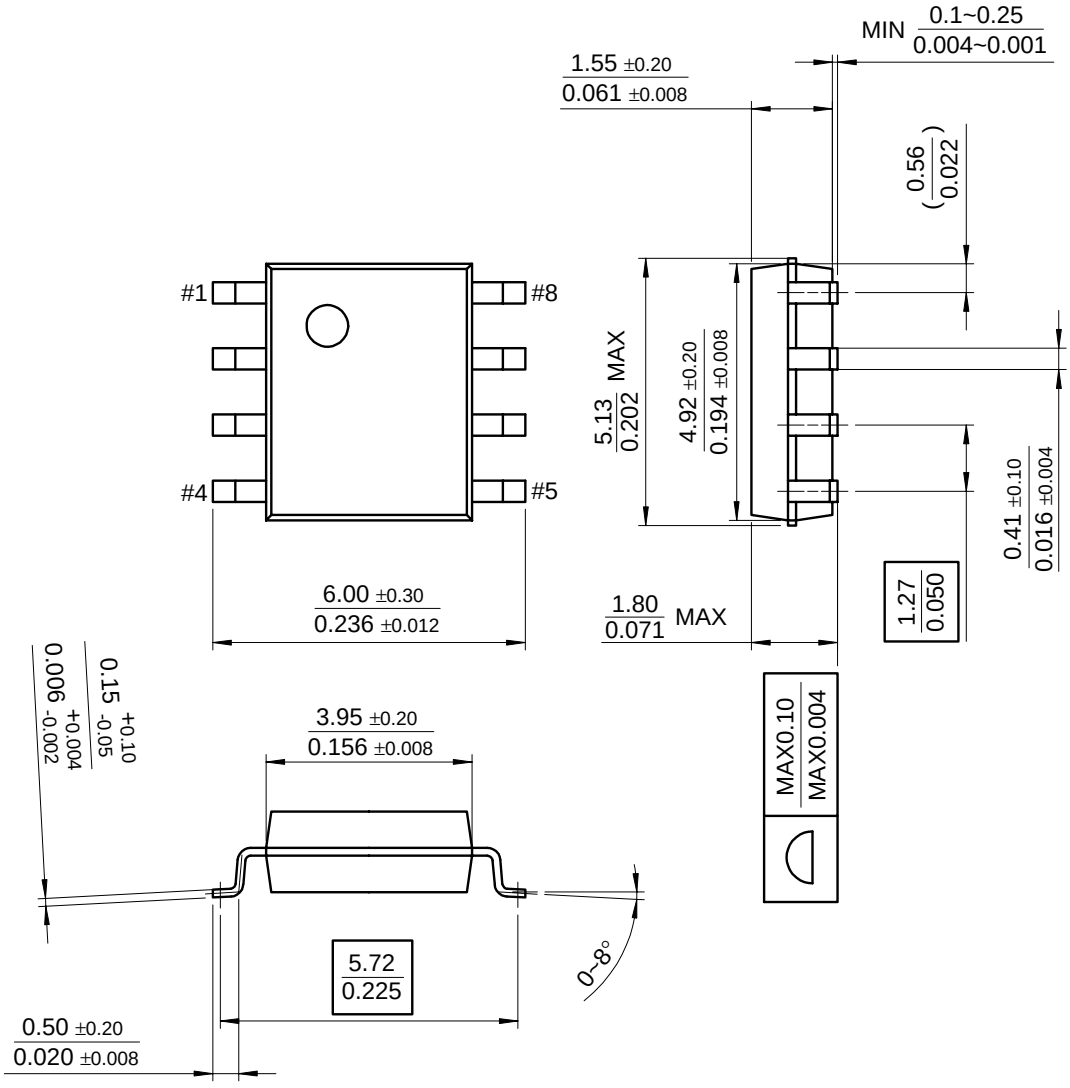

Dimensions in Millimeters

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DOME™	HiSeC™	PowerTrench®	SuperSOT™-8	
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EnSigna™	MicroFET™	QT Optoelectronics™	TinyLogic™	
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