

FAIRCHILD
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IGBT

FGS15N40L

General Description

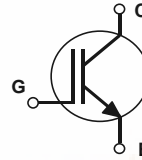
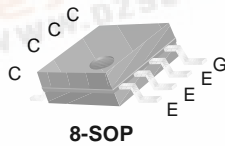
Insulated Gate Bipolar Transistors(IGBTs) with trench gate structure have superior performance in conduction and switching to planar gate structure and also have wide noise immunity. These devices are well suitable for strobe application

Features

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

Application

- Strobe Flash



Absolute Maximum Ratings

$T_C = 25^\circ\text{C}$ 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	$^\circ\text{C}$

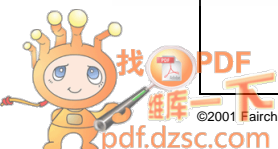
Notes :

(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°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
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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 R_G Value : R_G ≥ 15Ω

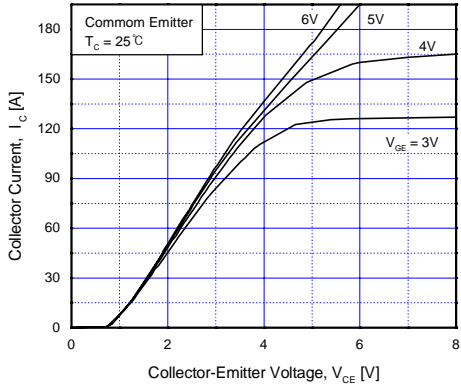


Fig 1. Typical Output Characteristics

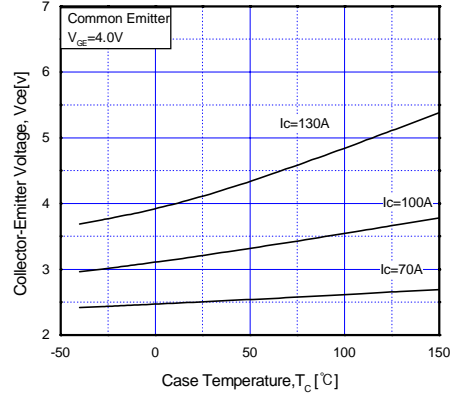


Fig 2. Saturation Voltage vs. Case Temperature at Variant Current Level

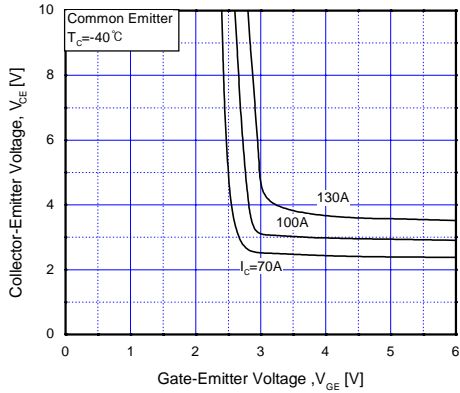


Fig 3. Saturation Voltage vs. V_{GE}

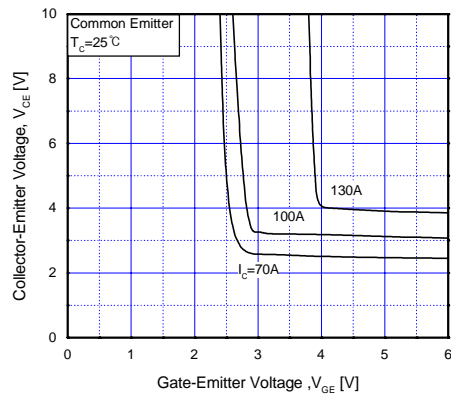


Fig 4. Saturation Voltage vs. V_{GE}

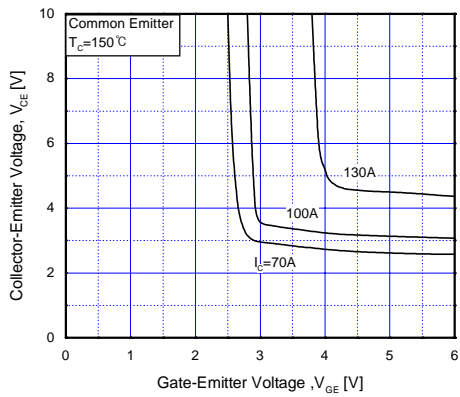


Fig 5. Saturation Voltage vs. V_{GE}

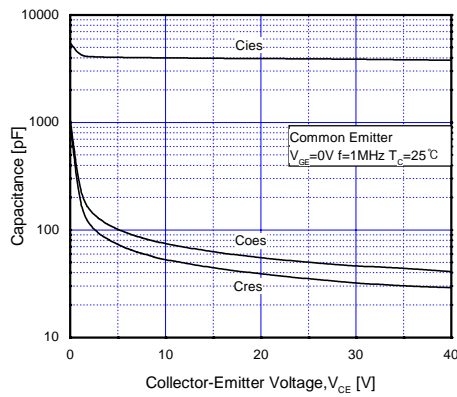


Fig 6. Capacitance Characteristics

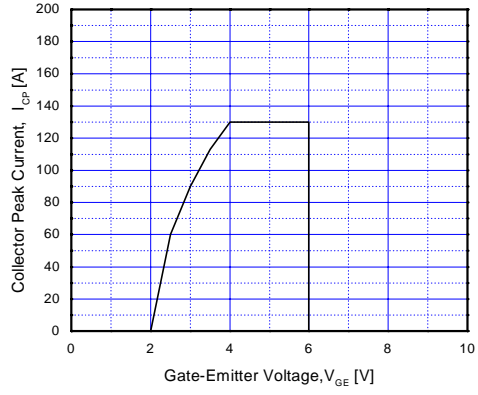
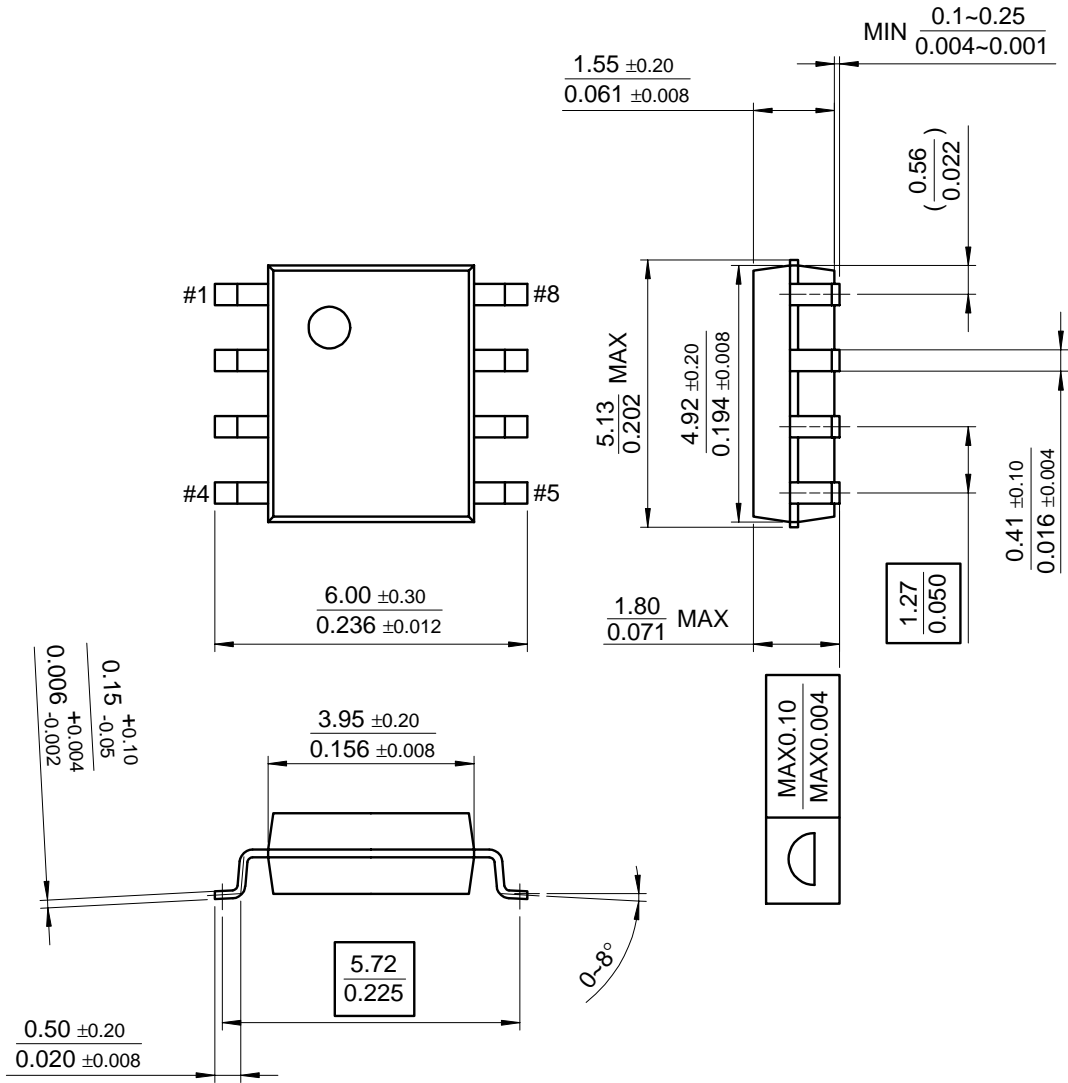


Fig 7. Collector Current Limit Vs Gate - Emitter Voltage Limit

Package Dimension

8-SOP

FGS15N40L



Dimensions in Millimeters

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