

SGR15N40L / SGU15N40L

General Description

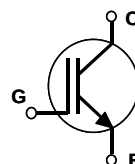
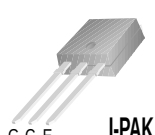
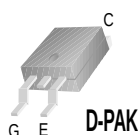
Insulated Gate Bipolar Transistors (IGBTs) with a trench gate structure provide superior conduction and switching performance in comparison with transistors having a planar gate structure. They also have wide noise immunity. These devices are very suitable for strobe applications

Features

- High input impedance
- High peak current capability (130A)
- Easy gate drive

Application

Strobe flash.



Absolute Maximum Ratings T_C = 25°C unless otherwise noted

Symbol	Description	SGR / SGU15N40L	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 _C = 25°C	45	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, 1/8" from case for 5 seconds	300	°C

Notes :

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

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Units
R _{θJC}	Thermal Resistance, Junction-to-Case	--	3.0	°C/W
R _{θJA} (D-PAK)	Thermal Resistance, Junction-to-Ambient (PCB Mount) (2)	--	50	°C/W
R _{θJA} (I-PAK)	Thermal Resistance, Junction-to-Ambient	--	110	°C/W

Notes :

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

Electrical Characteristics of the 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	uA
I _{GES}	G - E Leakage Voltage	V _{GE} = V _{GES} , V _{CE} = 0V	--	--	± 0.1	uA
On Characteristics						
V _{GE(th)}	G - E Threshold Voltage	I _C = 1mA, V _{CE} = V _{GE}	0.5	1.0	1.4	V
V _{CE(sat)}	C - E Saturation Current	I _C = 130A, V _{GE} = 4.5V	2.0	4.5	8.0	V
Dynamic Characteristics						
C _{ies}	Input Capacitance	V _{GE} = 0V, V _{CE} = 30V, f = 1MHz	--	3000	--	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} = 4.5V, R _G = 15Ω Resistive Load	--	0.08	--	us
t _r	Rise Time		--	1.4	--	us
t _{d(off)}	Turn-Off Delay Time		--	0.1	0.5	us
t _f	Fall Time		--	1.1	2.0	us

* Notes : Recommendation of R_G Value : R_G ≥ 15Ω

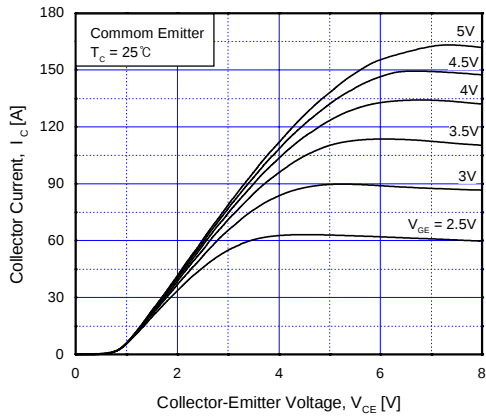


Fig 1. Typical Output Characteristics

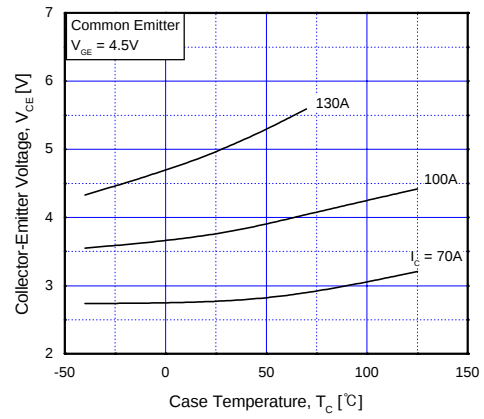


Fig 2. Saturation Voltage vs. Case Temperature at Variant Current Level

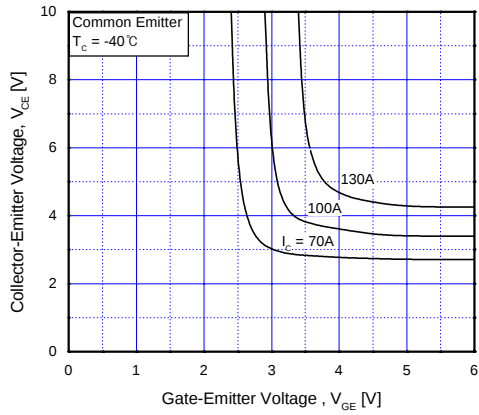


Fig 3. Saturation Voltage vs. V_{GE}

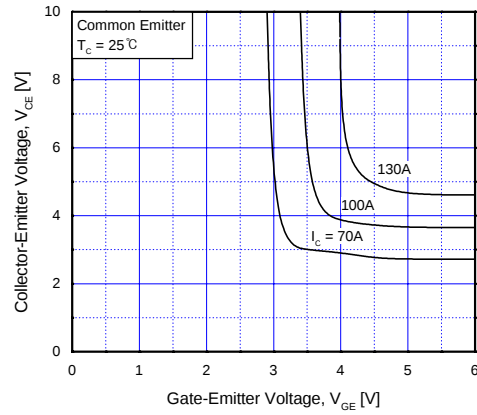


Fig 4. Saturation Voltage vs. V_{GE}

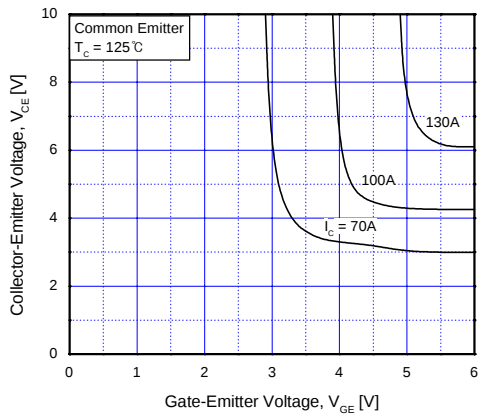


Fig 5. Saturation Voltage vs. V_{GE}

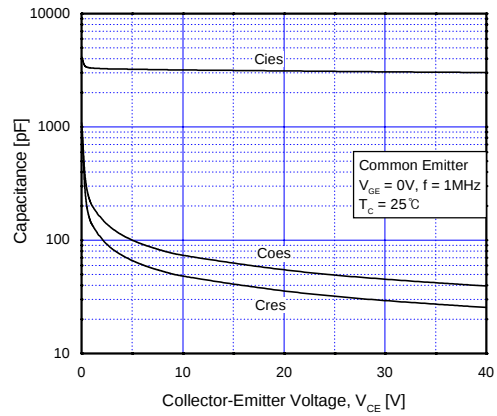


Fig 6. Capacitance Characteristics

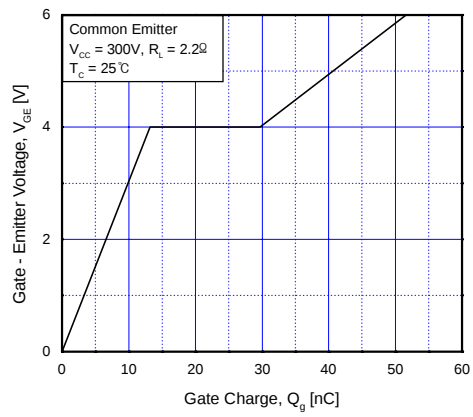


Fig 7. Gate Charge Characteristics

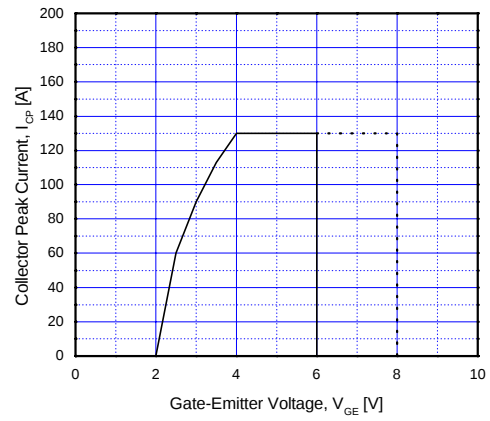


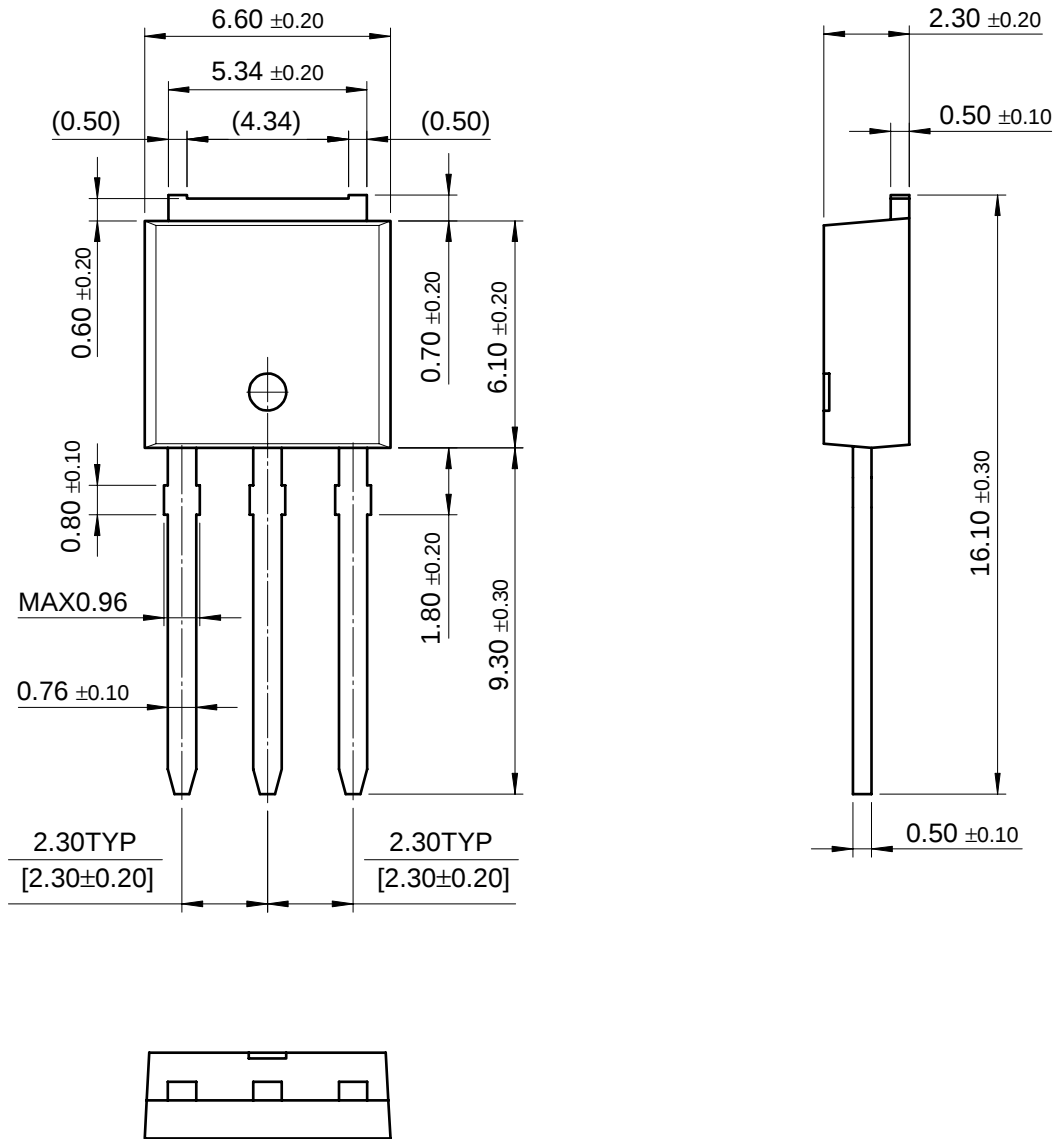
Fig 8. Collector Current Limit vs.
Gate - Emitter Voltage Limit

Technical drawing of a 2-pin connector with dimensions in mm. The drawing includes a top view, a side view, and a cross-sectional view. Dimensions are given in millimeters with tolerances. Key dimensions include overall width 6.60 ±0.20, pin spacing 5.34 ±0.30, pin diameter 0.76 ±0.10, and overall height 9.50 ±0.30. The drawing also shows a 2.30TYP dimension for the pin width and a 0.70 dimension for the pin height.

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Package Dimension (Continued)

I-PAK



Dimensions in Millimeters

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