PD - 94060

International
IOR Rectifier

Ignition IGBT

Die in Wafer Form

IRGC14C40LB
IRGC14C40LC
IRGC14C40LD

IGBT with on-chip Gate-Emitter and Gate-Collector clamps

Features

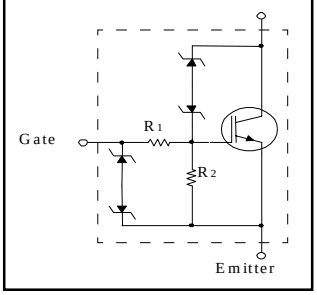
- Most Rugged in Industry
- Logic-Level Gate Drive
- > 6KV ESD Gate Protection
- Low Saturation Voltage
- High Self-clamped Inductive Switching Energy
- Qualified for the Automotive Qualified [Q101] .

Description

The advanced IGBT process family includes a MOS gated, N-channel logic level device which is intended for coil-on-plug automotive ignition applications and small-engine ignition circuits. Unique features include on-chip active voltage clamps between the Gate-Emitter and Gate-Collector which provide over voltage protection capability in ignition circuits.

NOTES: 1) Part number IRGC14C40LB are die in wafer form probed and uncut; IRGC14C40LC are die on film probed and cut; and IRGC14C40LD are probed die in wafle pack. 2) Reference packaged parts are IRGS14C40L, IRGSL14C40L, and IRGB14C40L.

TERMINAL DIAGRAM



Packaged Characteristics:

- BV_{CES} = 370V min, 430V max
- I_C @ T_C = 110°C = 14A
- $V_{CE(on)}$ typ= 1.2V @7A @25°C
- $I_{L(min)}$=11.5A @25°C,L=4.7mH

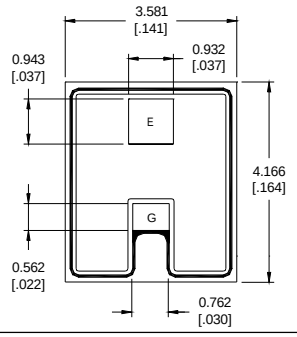
Electrical Characteristics (Wafer Form)

Parameter	Description	Guaranteed (min, max)	Test Conditions @ T_J = 25°C
$V_{CE\ (on)}$	Collector-to-Emitter Saturation Voltage	2.65V max	I_C = 10A, V_{GE} = 4.5V
BV_{CES}	Colletor-to-Emitter Breakdown Voltage	370V min, 430V max	R_G = 1K ohm, I_{CES} = 25mA, V_{GE} = 0V
$V_{GE(th)}$	Gate Threshold Voltage	1.2V min, 2.4V max	V_{GE} = V_{CE} , I_C = 1mA
I_{CES}	Zero Gate Voltage Collector Current	10µA max	R_G = 1K ohm, V_{CE} = 300V
I_{GES}	Gate-to-Emitter Leakage Current	±0.32mA min, ±1mA max	V_{GE} = +/-10V
T_J	Operating Junction and Storage Temperature Range	-40°C to 175°C	
T_{STG}			

Mechanical Data

Nominal Backmetal Composition, (Thickness)	Cr - Ni/V - Ag, (0.1µm - 0.2µm - 0.25µm)
Nominal Front Metal Composition, (Thickness)	99% Al/1% Si, (4µm)
Dimensions	0.141" x 0.164"
Wafer Diameter	150mm, with std. < 100 > flat
Wafer Thickness, Tolerance	.015" +/- .003"
Relevant Die Mechanical Dwg. Number	01-5467
Minimum Street Width	100µm
Reject Ink Dot Size	0.25mm diameter minimum
Ink Dot Location	Consistent throughout same wafer lot
Recommended Storage Environment	Store in original container, in dessicated nitrogen, with no contamination
Recommended Die Attach Conditions	For optimum electrical results, die attach temperature should not exceed 300°C

Die Outline



NOTES:
1. ALL DIMENSIONS ARE SHOWN IN MILLIMETERS [INCHES].
2. CONTROLLING DIMENSION: [INCH].
3. LETTER DESIGNATION:
   S = SOURCE SK = SOURCE KELVIN E = EMITTER
   G = GATE IS = CURRENTSENSE
4. DIMENSIONAL TOLERANCES:
   BONDING PADS: < 0.635 TOLERANCE = +/- 0.013
   WIDTH < [.0250] TOLERANCE = +/- [.0005]
   & > 0.635 TOLERANCE = +/- 0.025
   LENGTH > [.0250] TOLERANCE = +/- [.0010]
   OVERALL DIE: < 1.270 TOLERANCE = +/- 0.102
   WIDTH < [.050] TOLERANCE = +/- [.004]
   & > 1.270 TOLERANCE = +/- 0.203
   LENGTH > [.050] TOLERANCE = +/- [.008]