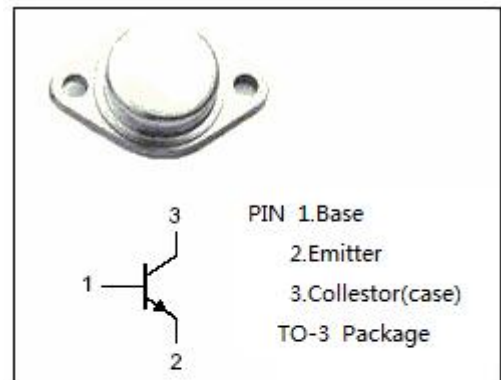


**isc Silicon NPN Power Transistor**
**2N5038**
**DESCRIPTION**

- High Speed- $t_f= 0.5 \mu s$  (Max)
- Low Saturation Voltage-  
 $V_{CE(sat)} \leq 2.5V @ I_C= 20A$
- 100% avalanche tested
- Minimum Lot-to-Lot variations for robust device Performance and reliable operation.

**APPLICATIONS**

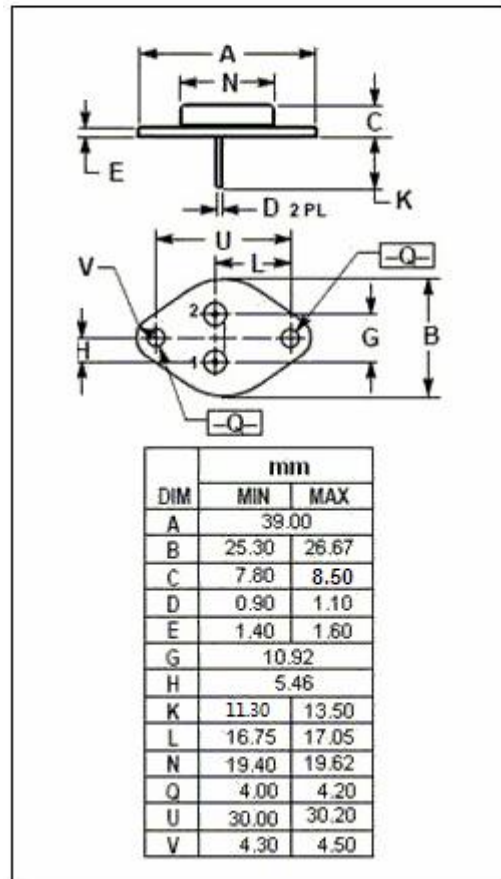
- Designed for use in switching regulators, inverters, wide-band amplifiers and power oscillators in industrial and commercial applications.


**ABSOLUTE MAXIMUM RATINGS( $T_a=25^\circ C$ )**

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CBO}$	Collector- Base Voltage	150	V
$V_{CEO}$	Collector-Emitter Voltage	90	V
$V_{EBO}$	Emitter-Base Voltage	7	V
$I_C$	Collector Current-Continuous	20	A
$I_B$	Base Current-Continuous	5	A
$P_C$	Collector Power Dissipation @ $T_c=25^\circ C$	140	W
$T_J$	Junction Temperature	200	$^\circ C$
$T_{stg}$	Storage Temperature Range	-65~200	$^\circ C$

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	MAX	UNIT
$R_{th j-c}$	Thermal Resistance,Junction to Case	1.25	$^\circ C/W$



**isc Silicon NPN Power Transistor****2N5038****ELECTRICAL CHARACTERISTICS**T<sub>j</sub>=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
V <sub>CE0(SUS)</sub>	Collector-Emitter Sustaining Voltage	I <sub>C</sub> = 50mA ; I <sub>B</sub> = 0	90		V
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 20A; I <sub>B</sub> = 5.0A		2.5	V
V <sub>BE(sat)</sub>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 20A; I <sub>B</sub> = 5.0A		3.3	V
I <sub>CEX</sub>	Collector Cutoff Current	V <sub>CE</sub> = 150V; V <sub>BE(off)</sub> =1.5V		0.5	mA
I <sub>EBO</sub>	Emitter Cutoff Current	V <sub>EB</sub> = 5.0V; I <sub>C</sub> = 0 V <sub>EB</sub> = 7.0V; I <sub>C</sub> = 0		5 50	mA
h <sub>FE</sub>	DC Current Gain	I <sub>C</sub> = 12A ; V <sub>CE</sub> = 5V	20	100	

## Switching times

t <sub>r</sub>	Rise Time	V <sub>CC</sub> = 30V, I <sub>C</sub> = 12A , I <sub>B1</sub> = -I <sub>B2</sub> = 1.2A,		0.5	μ s
t <sub>s</sub>	Storage Time			1.5	μ s
t <sub>f</sub>	Fall Time			0.5	μ s

## Notice:

ISC reserves the rights to make changes of the content herein the datasheet at any time without notification. The information contained herein is presented only as a guide for the applications of our products.

ISC products are intended for usage in general electronic equipment. The products are not designed for use in equipment which require specialized quality and/or reliability, or in equipment which could have applications in hazardous environments, aerospace industry, or medical field. Please contact us if you intend our products to be used in these special applications.

ISC makes no warranty or guarantee regarding the suitability of its products for any particular purpose, nor does ISC assume any liability arising from the application or use of any products, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages.