

**isc Silicon NPN Power Transistor**

**2SC3042**

**DESCRIPTION**

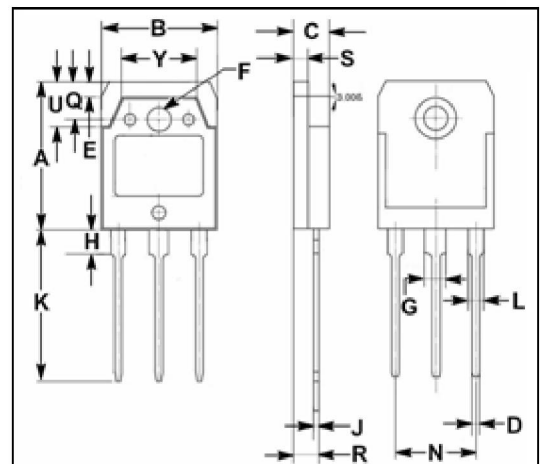
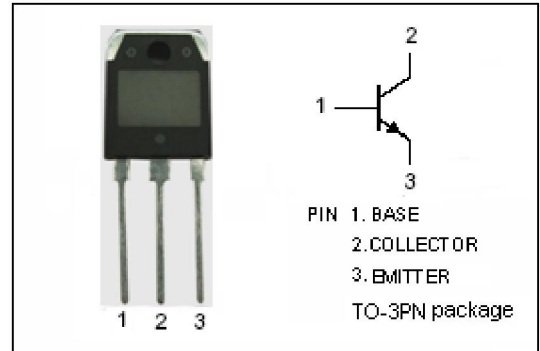
- Collector-Emitter Breakdown Voltage-  
:  $V_{(BR)CEO} = 400V(\text{Min})$
- Fast Switching Speed
- Wide Area of Safe Operation

**APPLICATIONS**

- Designed for switching regulator applications.

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

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CBO}$	Collector-Base Voltage	500	V
$V_{CEO}$	Collector-Emitter Voltage	400	V
$V_{EBO}$	Emitter-Base Voltage	7	V
$I_C$	Collector Current-Continuous	12	A
$I_{CM}$	Collector Current-Peak	25	A
$I_B$	Base Current-Continuous	4	A
$P_C$	Collector Power Dissipation @ $T_a=25^\circ\text{C}$	2.5	W
	Collector Power Dissipation @ $T_c=25^\circ\text{C}$	100	
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature Range	-55~150	$^\circ\text{C}$



DIM	mm	
	MIN	MAX
A	19.90	20.10
B	15.38	15.42
C	4.75	4.85
D	0.90	1.10
E	1.90	2.10
F	3.40	3.60
G	2.98	3.02
H	3.20	3.40
J	0.595	0.605
K	19.95	20.25
L	1.98	2.02
N	10.89	10.91
Q	4.95	5.05
R	3.35	3.45
S	1.995	2.005
U	5.90	6.10
Y	9.90	10.10

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## ELECTRICAL CHARACTERISTICS

 $T_C=25^\circ\text{C}$  unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C=10\text{mA}; R_{BE}=\infty$	400			V
$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage	$I_C=12\text{A}; I_B=2.4\text{A}; L=50\mu\text{H}$	400			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C=1\text{mA}; I_E=0$	500			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E=1\text{mA}; I_C=0$	7			V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=8\text{A}; I_B=1.6\text{A}$			1.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C=8\text{A}; I_B=1.6\text{A}$			1.5	V
$I_{CBO}$	Collector Cutoff Current	$V_{CB}=400\text{V}; I_E=0$			10	$\mu\text{A}$
$I_{EBO}$	Emitter Cutoff Current	$V_{EB}=5\text{V}; I_C=0$			10	$\mu\text{A}$
$h_{FE-1}$	DC Current Gain	$I_C=1.6\text{A}; V_{CE}=5\text{V}$	15		50	
$h_{FE-2}$	DC Current Gain	$I_C=8\text{A}; V_{CE}=5\text{V}$	8			
$f_T$	Current-Gain—Bandwidth Product	$I_C=1.6\text{A}; V_{CE}=10\text{V}$		20		MHz
$C_{OB}$	Output Capacitance	$V_{CB}=10\text{V}; f_{test}=1.0\text{MHz}$		160		pF

## Switching times

$t_{on}$	Turn-on Time	$I_C=10\text{A}, I_{B1}=-I_{B2}=2\text{A}; R_L=20\Omega; V_{CC}=200\text{V}$			1.0	$\mu\text{s}$
$t_{stg}$	Storage Time				2.5	$\mu\text{s}$
$t_f$	Fall Time				1.0	$\mu\text{s}$

◆  $h_{FE-1}$  Classifications

L	M	N
15-30	20-40	30-50