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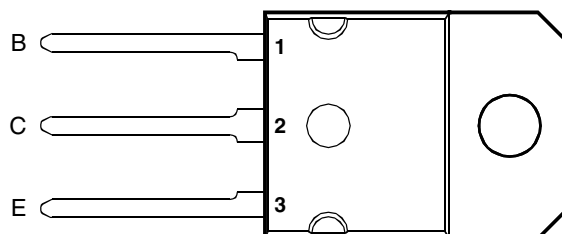
[Bourns Inc.](#)  
[TIP3055-S](#)

For any questions, you can email us directly:  
[sales@integrated-circuit.com](mailto:sales@integrated-circuit.com)



- **Designed for Complementary Use with the TIP2955 Series**
- **90 W at 25°C Case Temperature**
- **15 A Continuous Collector Current**
- **Customer-Specified Selections Available**

**SOT-93 PACKAGE  
(TOP VIEW)**



Pin 2 is in electrical contact with the mounting base.

MDTRAAA

**absolute maximum ratings at 25°C case temperature (unless otherwise noted)**

RATING	SYMBOL	VALUE	UNIT
Collector-base voltage ( $I_E = 0$ )	$V_{CB0}$	100	V
Collector-emitter voltage ( $I_B = 0$ ) (see Note 1)	$V_{CE0}$	70	V
Emitter-base voltage	$V_{EB0}$	7	V
Continuous collector current	$I_C$	15	A
Continuous base current	$I_B$	7	A
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)	$P_{tot}$	90	W
Continuous device dissipation at (or below) 25°C free air temperature (see Note 3)	$P_{tot}$	3.5	W
Unclamped inductive load energy (see Note 4)	$\frac{1}{2}LI_C^2$	62.5	mJ
Operating junction temperature range	$T_j$	-65 to +150	°C
Storage temperature range	$T_{stg}$	-65 to +150	°C
Lead temperature 3.2 mm from case for 10 seconds	$T_L$	260	°C

- NOTES: 1. This value applies when the base-emitter resistance  $R_{BE} = 100 \Omega$ .  
 2. Derate linearly to 150°C case temperature at the rate of 0.72 W/°C.  
 3. Derate linearly to 150°C free air temperature at the rate of 28 mW/°C.  
 4. This rating is based on the capability of the transistor to operate safely in a circuit of:  $L = 20 \text{ mH}$ ,  $I_{B(on)} = 0.4 \text{ A}$ ,  $R_{BE} = 100 \Omega$ ,  $V_{BE(off)} = 0$ ,  $R_S = 0.1 \Omega$ ,  $V_{CC} = 10 \text{ V}$ .

**PRODUCT INFORMATION**

**TIP3055**  
**NPN SILICON POWER TRANSISTOR**



**electrical characteristics at 25°C case temperature**

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$ Collector-emitter breakdown voltage	$I_C = 30 \text{ mA}$	$I_B = 0$	(see Note 5)	60			V
$I_{CER}$ Collector-emitter cut-off current	$V_{CE} = 70 \text{ V}$	$R_{BE} = 100 \Omega$				1	mA
$I_{CEO}$ Collector cut-off current	$V_{CE} = 30 \text{ V}$	$I_B = 0$				0.7	mA
$I_{CEV}$ Voltage between base and emitter	$V_{CE} = 100 \text{ V}$	$V_{BE} = -1.5 \text{ V}$				5	mA
$I_{EBO}$ Emitter cut-off current	$V_{EB} = 7 \text{ V}$	$I_C = 0$				5	mA
$h_{FE}$ Forward current transfer ratio	$V_{CE} = 4 \text{ V}$ $V_{CE} = 4 \text{ V}$	$I_C = 4 \text{ A}$ $I_C = 1.0 \text{ A}$	(see Notes 5 and 6)	20 5		70	
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = 0.4 \text{ A}$ $I_B = 3.3 \text{ A}$	$I_C = 4 \text{ A}$ $I_C = 1.0 \text{ A}$	(see Notes 5 and 6)			1.1 3	V
$V_{BE}$ Base-emitter voltage	$V_{CE} = 4 \text{ V}$	$I_C = 4 \text{ A}$	(see Notes 5 and 6)			1.8	V
$h_{fe}$ Small signal forward current transfer ratio	$V_{CE} = 10 \text{ V}$	$I_C = 0.5 \text{ A}$	$f = 1 \text{ kHz}$	15			
$ h_{fe} $ Small signal forward current transfer ratio	$V_{CE} = 10 \text{ V}$	$I_C = 0.5 \text{ A}$	$f = 1 \text{ MHz}$	3			

NOTES: 5. These parameters must be measured using pulse techniques,  $t_p = 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .  
 6. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

**thermal characteristics**

PARAMETER	MIN	TYP	MAX	UNIT
$R_{\theta JC}$ Junction to case thermal resistance			1.39	°C/W
$R_{\theta JA}$ Junction to free air thermal resistance			35.7	°C/W

**resistive-load-switching characteristics at 25°C case temperature**

PARAMETER	TEST CONDITIONS †			MIN	TYP	MAX	UNIT
$t_{on}$ Turn-on time	$I_C = 6 \text{ A}$	$I_{B(on)} = 0.6 \text{ A}$	$I_{B(off)} = -0.6 \text{ A}$		0.6		$\mu\text{s}$
$t_{off}$ Turn-off time	$V_{BE(off)} = -4 \text{ V}$	$R_L = 5 \Omega$	$t_p = 20 \mu\text{s}$ , dc $\leq 2\%$		1		$\mu\text{s}$

† Voltage and current values shown are nominal; exact values vary slightly with transistor parameters.

**PRODUCT INFORMATION**

DECEMBER 1970 - REVISED SEPTEMBER 2002  
 Specifications are subject to change without notice.



TYPICAL CHARACTERISTICS

TYPICAL DC CURRENT GAIN  
 VS  
 COLLECTOR CURRENT

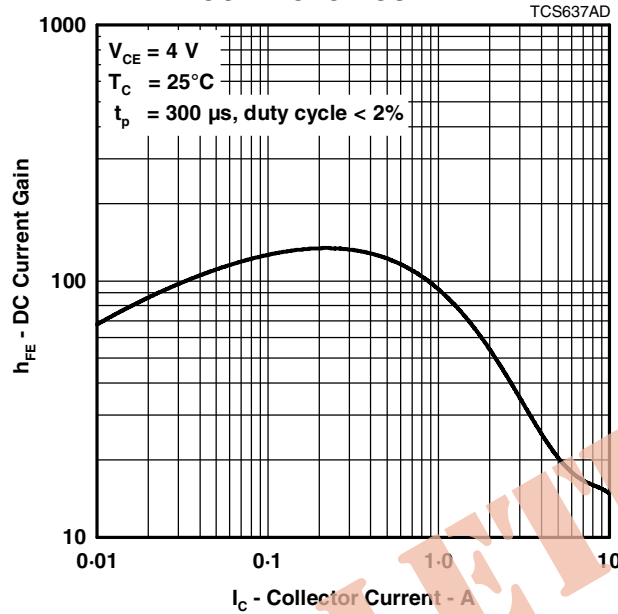


Figure 1.

MAXIMUM SAFE OPERATING REGIONS

MAXIMUM FORWARD-BIAS  
 SAFE OPERATING AREA

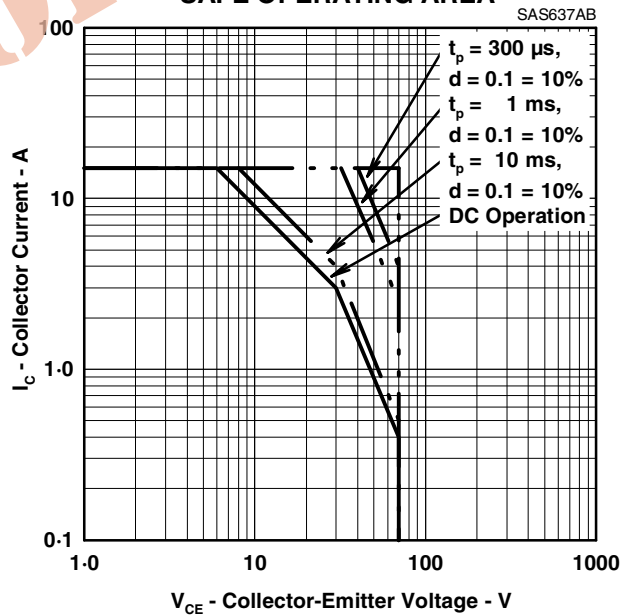


Figure 2.

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**THERMAL INFORMATION**

**MAXIMUM POWER DISSIPATION**  
**VS**  
**CASE TEMPERATURE**

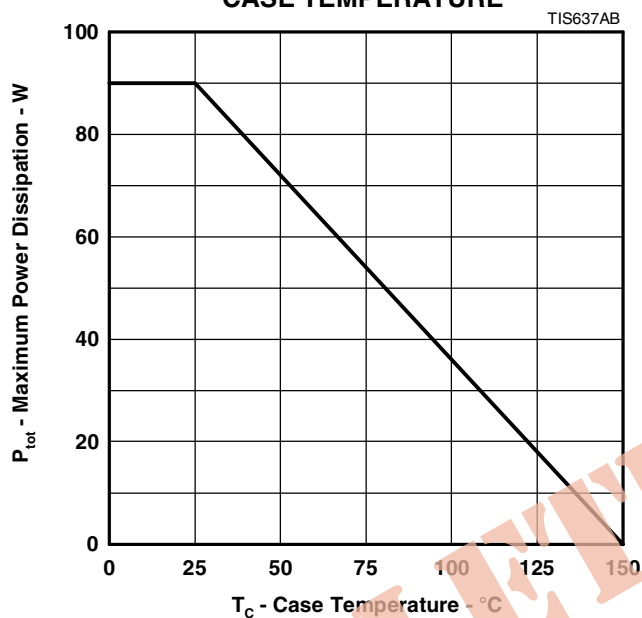


Figure 3.

**OBSOLETE**

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