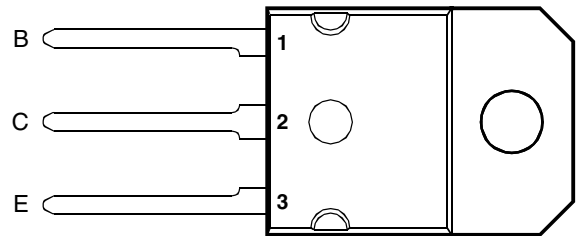


- **Designed for Complementary Use with the TIP3055 Series**
- **90 W at 25°C Case Temperature**
- **15 A Continuous Collector Current**
- **Customer-Specified Selections Available**

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



MDTRAAA

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

RATING	SYMBOL	VALUE	UNIT
Collector-base voltage ( $I_E = 0$ )	$V_{CBO}$	-100	V
Collector-emitter voltage ( $I_B = 0$ ) (see Note 1)	$V_{CER}$	-70	V
Emitter-base voltage	$V_{EBO}$	-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**

**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
$I_{CEO}$	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	$V_{CE} = -4 \text{ V}$ $V_{CE} = -4 \text{ V}$	$I_C = -4 \text{ A}$ $I_C = -10 \text{ A}$ (see Notes 5 and 6)	20 5		70	
$V_{CE(sat)}$	Collector-emitter saturation voltage	$I_B = -0.4 \text{ A}$ $I_B = -3.3 \text{ A}$	$I_C = -4 \text{ A}$ $I_C = -10 \text{ A}$ (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	$V_{CE} = -10 \text{ V}$	$I_C = -0.5 \text{ A}$ $f = 1 \text{ kHz}$	20			
$ 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	$I_C = -6 \text{ A}$	$I_{B(on)} = -0.6 \text{ A}$	$I_{B(off)} = 0.6 \text{ A}$		0.4		$\mu\text{s}$
$t_{off}$ Turn-off time	$V_{BE(off)} = 4 \text{ V}$	$R_L = 5 \Omega$	$t_p = 20 \mu\text{s}$ , dc $\leq 2\%$		0.7		$\mu\text{s}$

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

**TYPICAL CHARACTERISTICS**

**TYPICAL DC CURRENT GAIN  
vs  
COLLECTOR CURRENT**

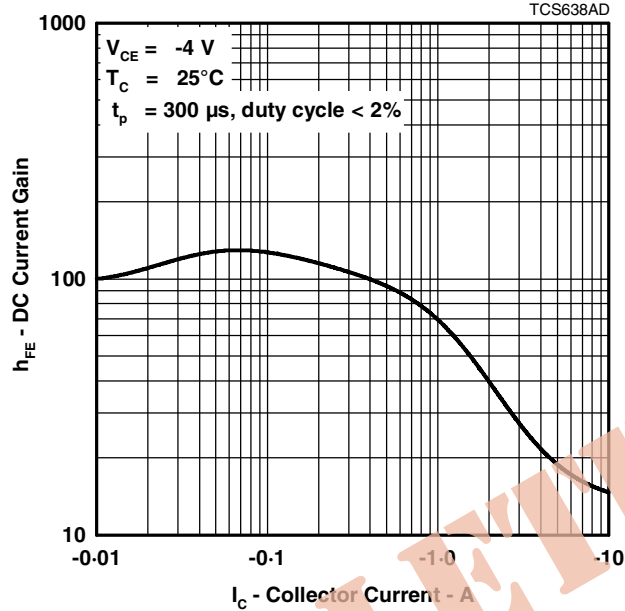


Figure 1.

**MAXIMUM SAFE OPERATING REGIONS**

**MAXIMUM FORWARD-BIAS  
SAFE OPERATING AREA**

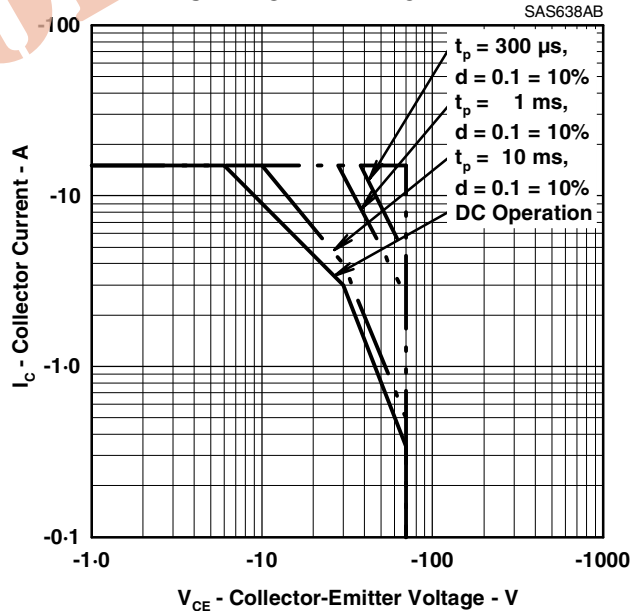


Figure 2.

**PRODUCT INFORMATION**

JANUARY 1972 - REVISED SEPTEMBER 2002  
Specifications are subject to change without notice.

**THERMAL INFORMATION**

**MAXIMUM POWER DISSIPATION  
VS  
CASE TEMPERATURE**

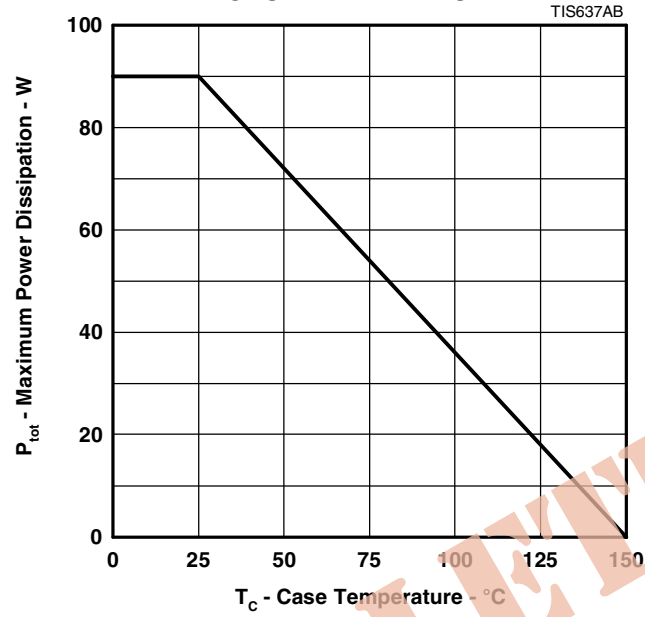


Figure 3.

OBSOLETE