

DEVELOPMENT DATA

This data sheet contains advance information and specifications are subject to change without notice.

TIP2955T

SILICON EPITAXIAL-BASE POWER TRANSISTOR

P-N-P transistor in a plastic envelope. With its n-p-n complement TIP3055T they are primarily intended for use in hi-fi equipment delivering an output of 15 to 25 W into a 4 Ω or 8 Ω load.

QUICK REFERENCE DATA

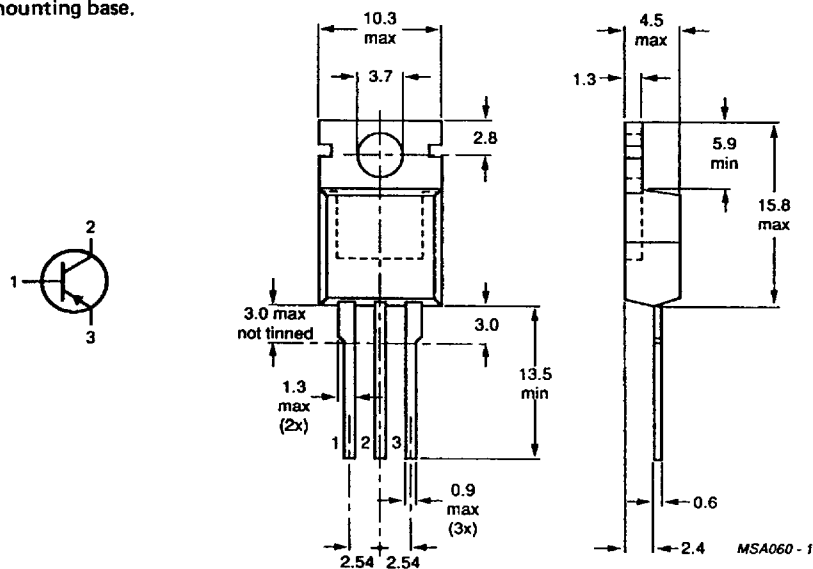
Collector-emitter voltage (open base)	$-V_{CEO}$	max.	60 V
Collector current (d.c.)	$-I_C$	max.	10 A
Total power dissipation up to $T_{mb} = 25^\circ\text{C}$	P_{tot}	max.	75 W
Transition frequency at $f = 1\text{ MHz}$ $-I_C = 0.5\text{ A}; -V_{CE} = 10\text{ V}$	f_T	>	2 MHz

MECHANICAL DATA

Dimensions in mm

Fig. 1 TO-220.

Collector connected to mounting base.



See also chapters Mounting instructions and Accessories.

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RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

Collector-base voltage (open emitter)	$-V_{CBO}$	max.	70 V
Collector-emitter voltage (open base)	$-V_{CEO}$	max.	60 V
Emitter-base voltage (open collector)	$-V_{EBO}$	max.	5 V
Collector current (d.c.)	$-I_C$	max.	10 A
Collector current (peak value, $t_p \leq 10$ ms)	$-I_{CM}$	max.	12 A
Base current (d.c.)	$-I_B$	max.	4 A
Total power dissipation up to $T_{mb} = 25$ °C	P_{tot}	max.	75 W
Storage temperature	T_{stg}		-65 to + 175 °C
Junction temperature	T_j	max.	150 °C

THERMAL RESISTANCE

From junction to mounting base	$R_{th\ j-mb}$	=	1,67 K/W
From junction to ambient in free air	$R_{th\ j-a}$	=	70 K/W

CHARACTERISTICS $T_j = 25$ °C unless otherwise specified

Collector cut-off current

 $I_B = 0; -V_{CE} = 30$ V $-I_{CEO} < 0,2$ mA $I_E = 0; -V_{CB} = 70$ V $-I_{CBO} < 0,1$ mA $I_E = 0; -V_{CB} = 70$ V; $T_j = 150$ °C $-I_{CBO} < 1$ mA $V_{BE} = 1,5$ V; $-V_{CB} = 70$ V $-I_{CEX} < 1$ mA $V_{BE} = 1,5$ V; $-V_{CB} = 70$ V; $T_j = 150$ °C $-I_{CEX} < 5$ mA

Emitter cut-off current

 $I_C = 0; -V_{EB} = 5$ V $-I_{EBO} < 0,5$ mA

Saturation voltages*

 $-I_C = 4$ A; $-I_B = 0,4$ A $-V_{CEsat} < 0,8$ V $-V_{BEsat} < 1,8$ V $-I_C = 10$ A; $-I_B = 3,3$ A $-V_{CEsat} < 4$ V

Base-emitter voltage*

 $-I_C = 4$ A; $-V_{CE} = 4$ V $-V_{BE} < 1,8$ V

D.C. current gain*

 $-I_C = 4$ A; $-V_{CE} = 4$ V $h_{FE} \quad 20$ to 70 $-I_C = 10$ A; $-V_{CE} = 4$ V $h_{FE} > 5$ Transition frequency at $f = 1$ MHz $-I_C = 0,5$ A; $-V_{CE} = 10$ V $f_T > 2$ MHz* Measured under pulse conditions: $t_p < 300$ μ s, $\delta < 2\%$.

Switching times

 $-I_{C\text{on}} = 2 \text{ A}; I_{B\text{on}} = I_{B\text{off}} = 0,2 \text{ A}$

turn-on time

turn-off time

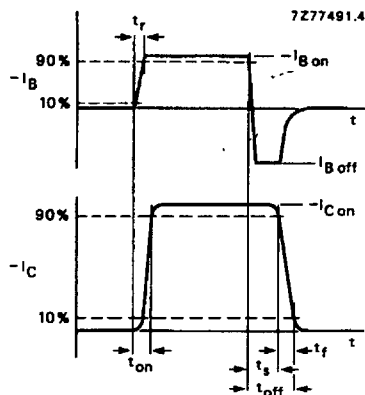
 $t_{\text{on}} < 1 \mu\text{s}$ $t_{\text{off}} < 2 \mu\text{s}$ 

Fig. 2 Switching times waveforms.

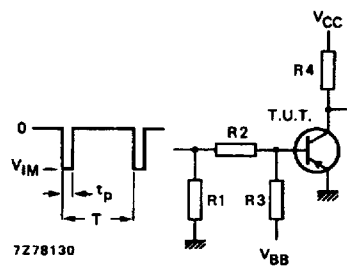
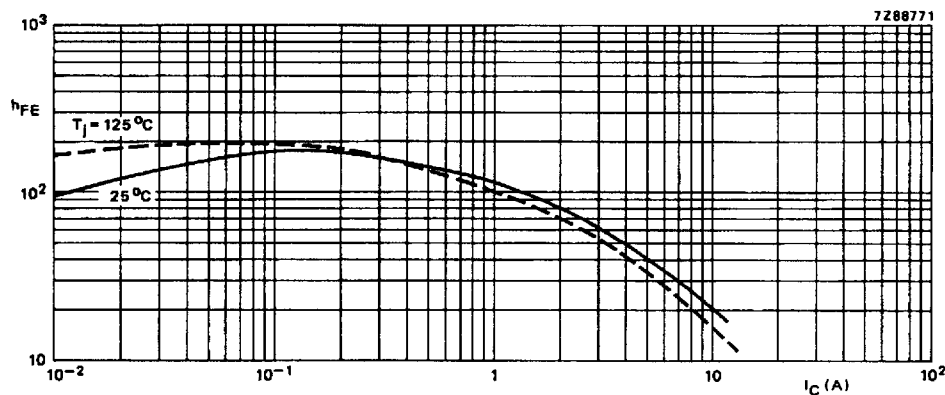


Fig. 3 Switching times test circuit.

$-V_{IM} = 15 \text{ V}$	$R3 = 22 \Omega$
$-V_{CC} = 20 \text{ V}$	$R4 = 10 \Omega$
$+V_{BB} = 4 \text{ V}$	$t_r = t_f = 15 \text{ ns}$
$R1 = 56 \Omega$	$t_p = 10 \mu\text{s}$
$R2 = 33 \Omega$	$T = 500 \mu\text{s}$

Fig. 4 Typical values d.c. current gain at $-V_{CE} = 2 \text{ V}$.

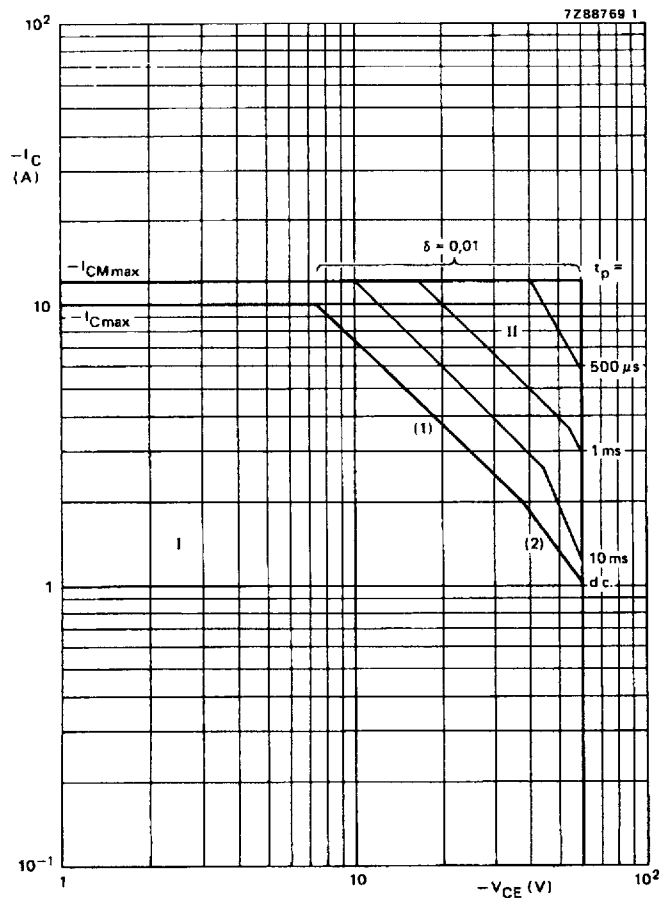


Fig. 5 Safe Operating Area; $T_{mb} = 25\text{ }^{\circ}\text{C}$.

- I Region of permissible d.c. operation.
- II Permissible extension for repetitive pulse operation.
- (1) $P_{tot\text{ max}}$ and $P_{peak\text{ max}}$ lines.
- (2) Second-breakdown limits.