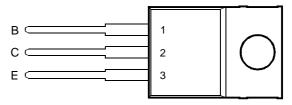
- Designed for Complementary Use with the TIP42 Series
- 65 W at 25°C Case Temperature
- 6 A Continuous Collector Current
- 10 A Peak Collector Current
- Customer-Specified Selections Available

TO-220 PACKAGE (TOP VIEW)



Pin 2 is in electrical contact with the mounting base.

MDTRACA

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

RATING	SYMBOL	VALUE	UNIT		
	TIP41		80		
Collector-base voltage (I _F = 0)	TIP41A	\/	100	V	
Collector-base voltage (IE = 0)	TIP41B	V _{CBO}	120		
	TIP41C		140		
	TIP41		40		
Collector-emitter voltage (I _B = 0)	TIP41A		60	V	
	TIP41B	V _{CEO}	80		
	TIP41C		100		
Emitter-base voltage	V _{EBO}	5	V		
Continuous collector current			6	Α	
Peak collector current (see Note 1)			10	Α	
Continuous base current			3	Α	
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)			65	W	
Continuous device dissipation at (or below) 25°C free air temperature (see Note 3)			2	W	
Unclamped inductive load energy (see Note 4)			62.5	mJ	
Operating junction temperature range			-65 to +150	°C	
Storage temperature range			-65 to +150	°C	
Lead temperature 3.2 mm from case for 10 seconds			250	°C	

NOTES: 1. This value applies for $t_p \le 0.3$ ms, duty cycle $\le 10\%$.

- 2. Derate linearly to 150°C case temperature at the rate of 0.52 W/°C.
- 3. Derate linearly to 150°C free air temperature at the rate of 16 mW/°C.
- 4. This rating is based on the capability of the transistor to operate safely in a circuit of: L = 20 mH, $I_{B(on)}$ = 0.4 A, R_{BE} = 100 Ω , $V_{BE(off)}$ = 0, R_S = 0.1 Ω , V_{CC} = 20 V.



TIP41, TIP41A, TIP41B, TIP41C NPN SILICON POWER TRANSISTORS

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electrical characteristics at 25°C case temperature

	PARAMETER		TEST CONDITI	ONS	MIN	TYP	MAX	UNIT
V _{(BR)CEO}	Collector-emitter breakdown voltage	I _C = 30 mA	I _B = 0	TIP41 TIP41A TIP41B	40 60 80			V
, ,		(see Note 5) TIP41C	=	100				
		V _{CE} = 80 V	$V_{BE} = 0$	TIP41			0.4	
loso	Collector-emitter	V _{CE} = 100 V	$V_{BE} = 0$	TIP41A			0.4	mA
ICES	cut-off current	V _{CE} = 120 V	$V_{BE} = 0$	TIP41B			0.4	
		V _{CE} = 140 V	$V_{BE} = 0$	TIP41C			0.4	
1	Collector cut-off	V _{CE} = 30 V	I _B = 0	TIP41/41A			0.7	mA
ICEO	current	$V_{CE} = 60 \text{ V}$	$I_B = 0$	TIP41B/41C			0.7	ША
I _{EBO}	Emitter cut-off current	V _{EB} = 5 V	I _C = 0				1	mA
h	Forward current	V _{CE} = 4 V	$I_C = 0.3 A$	(see Notes 5 and 6)	30			
h _{FE}	transfer ratio	V _{CE} = 4 V	$I_C = 3 A$		15		75	
V _{CE(sat)}	Collector-emitter saturation voltage	I _B = 0.6 A	I _C = 6 A	(see Notes 5 and 6)			1.5	V
V _{BE}	Base-emitter voltage	V _{CE} = 4 V	I _C = 6 A	(see Notes 5 and 6)			2	V
h _{fe}	Small signal forward current transfer ratio	V _{CE} = 10 V	I _C = 0.5 A	f = 1 kHz	20			
h _{fe}	Small signal forward current transfer ratio	V _{CE} = 10 V	$I_{C} = 0.5 \text{ A}$	f = 1 MHz	3			

NOTES: 5. These parameters must be measured using pulse techniques, t_p = 300 μ s, duty cycle \leq 2%.

thermal characteristics

PARAMETER			TYP	MAX	UNIT
$R_{\theta JC}$	Junction to case thermal resistance			1.92	°C/W
$R_{\theta JA}$	Junction to free air thermal resistance			62.5	°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 A	$I_{B(on)} = 0.6 A$	$I_{B(off)} = -0.6 A$		0.6		μs
t _{off}	Turn-off time	$V_{BE(off)} = -4 V$	$R_L = 5 \Omega$	$t_p = 20 \ \mu s, \ dc \le 2\%$		1		μs

 $^{^{\}dagger} \ \ \mbox{Voltage and current values shown are nominal; exact values vary slightly with transistor parameters.}$

^{6.} These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

TYPICAL CHARACTERISTICS

TYPICAL DC CURRENT GAIN COLLECTOR CURRENT TCS633AD 1000 $V_{CE} = 4 V$ $T_{\rm C} = 25^{\circ}{\rm C}$ $t_p = 300 \mu s$, duty cycle < 2%h_{FE} - DC Current Gain 100 10 1.0 0.01 0.1 1-0 10 I_C - Collector Current - A

Figure 1.

COLLECTOR-EMITTER SATURATION VOLTAGE

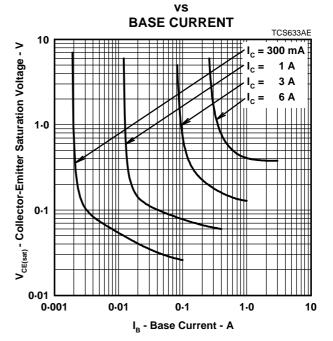
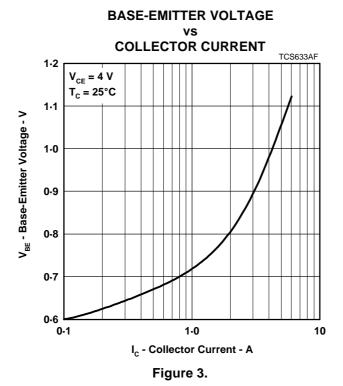
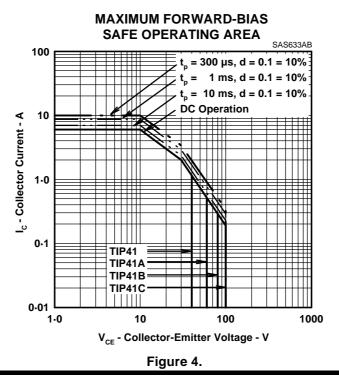


Figure 2.





MAXIMUM SAFE OPERATING REGIONS



THERMAL INFORMATION

MAXIMUM POWER DISSIPATION

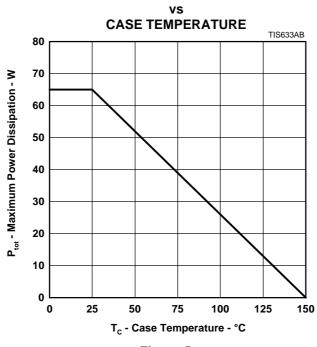


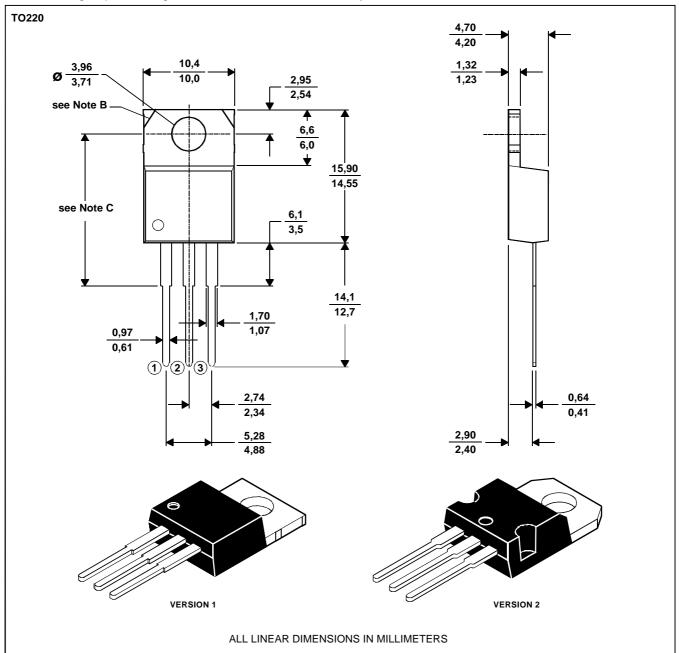
Figure 5.

MECHANICAL DATA

TO-220

3-pin plastic flange-mount package

This single-in-line package consists of a circuit mounted on a lead frame and encapsulated within a plastic compound. The compound will withstand soldering temperature with no deformation, and circuit performance characteristics will remain stable when operated in high humidity conditions. Leads require no additional cleaning or processing when used in soldered assembly.



NOTES: A. The centre pin is in electrical contact with the mounting tab.

- B. Mounting tab corner profile according to package version.
- C. Typical fixing hole centre stand off height according to package version. Version 1, 18.0 mm. Version 2, 17.6 mm.



TIP41, TIP41A, TIP41B, TIP41C NPN SILICON POWER TRANSISTORS

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