

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

MAXIMUM RATINGS

Ratings	Symbol	2N3442	Unit
Collector-emitter voltage	V_{CEO}	140	V
Collector-base voltage	V_{CBO}	160	V
Collector-emitter voltage	V_{CER}	150	V
Emitter-base voltage	V_{EBO}	7.0	V
Base current	I_B	7.0	A
Collector current	I_C	10	A
Total power dissipation @ $T_A = 25^\circ\text{C}^{(1)}$ @ $T_C = 25^\circ\text{C}^{(2)}$	P_T	6.0 117	W
Operating junction and storage temperature range	T_J, T_{stg}	-55 to +200	$^\circ\text{C}$
THERMAL CHARACTERISTICS			
Maximum thermal resistance, junction-to-case	$R_{\theta JC}$	1.5	$^\circ\text{C/W}$

Note 1: Derate linearly 34.2mW/ $^\circ\text{C}$ for $T_A > 25^\circ\text{C}$.

Note 2: Derate linearly 668mW/ $^\circ\text{C}$ for $T_C > 25^\circ\text{C}$.

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Characteristics	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Collector-emitter voltage $I_C = 3.0\text{A}$	$V_{(BR)CEO}$	140	-	V
Collector-emitter breakdown voltage $I_C = 1.5\text{A}, R_{BE} = 100\Omega$	$V_{(BR)CER}$	150	-	V
Collector-emitter breakdown voltage $I_C = 1.5\text{A}, V_{EB} = 1.5\text{V}$	$V_{(BR)CEX}$	160	-	V
Collector-base cutoff current $V_{CB} = 140\text{V}, V_{EB} = 1.5\text{V}$	I_{CEX}	-	1.0	mA
Emitter-base cutoff current $V_{EB} = 7\text{V}$	I_{EBO}	-	1.0	mA
ON-CHARACTERISTICS⁽³⁾				
Forward-current transfer ratio $I_C = 3.0\text{A}, V_{CE} = 4.0\text{V}$	h_{FE}	20	70	-
Collector-emitter saturation voltage $I_C = 3.0\text{A}, I_B = 300\text{mA}$	$V_{CE(sat)}$	-	1.0	V
Base-emitter voltage $I_C = 3.0\text{A}, V_{CE} = 4.0\text{V}$	V_{BE}	-	1.7	V
DYNAMIC CHARACTERISTICS				
Small signal short circuit forward current transfer ratio $I_C = 3.0\text{A}, V_{CE} = 4.0\text{V}, f = 100\text{kHz}$	$ h_{fe} $	1.0	-	-

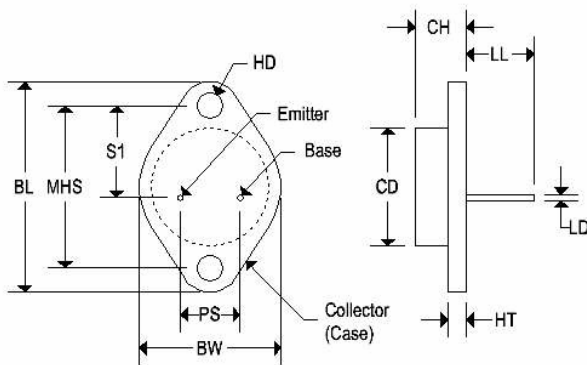
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Characteristics	Symbol	Min.	Max.	Unit
SAFE OPERATING AREA				
DC tests $T_C = 25^\circ\text{C}$, 1 cycle, $t = 1.0\text{s}$ Test 1 $V_{CE} = 11.7\text{V}$, $I_C = 10\text{A}$ Test 2 $V_{CE} = 78\text{V}$, $I_C = 1.5\text{A}$ Test 3 $V_{CE} = 140\text{V}$, $I_C = 0.5\text{A}$				

Note 3: Pulse test: pulse width = $300\mu\text{s}$, duty cycle $\leq 2.0\%$.

MECHANICAL CHARACTERISTICS

Case	TO-3
Marking	Alpha-numeric
Polarity	See below



	TO-3			
	Inches		Millimeters	
	Min	Max	Min	Max
CD	-	0.875	-	22.220
CH	0.250	0.335	6.350	8.510
HT	0.055	0.135	1.400	3.430
BW	-	1.050	-	26.670
HD	0.131	0.188	3.330	4.780
LD	0.038	0.043	0.970	1.090
LL	0.312	0.500	7.920	12.700
BL	1.550 REF		39.370 REF	
MHS	1.177	1.197	29.900	30.400
PS	0.420	0.440	10.670	11.180
S1	0.655	0.675	16.640	17.150