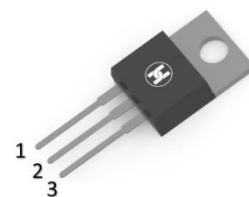


BIPOLAR TRANSISTOR (NPN)

FEATURES

- High breakdown voltage($V_{CBO}>900V$)
- Wide safe Operating Area
- Fast switching speed



1.BASE 2.COLLECTOR 3.EMITTER

TO-220

MECHANICAL DATA

- Case: TO-220
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Weight: 2.30 grams (approximate)

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	900	V
Collector-Emitter Voltage	V_{CEO}	800	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current	I_C	0.5	A
Collector Power Dissipation	P_C	2.0	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~+150	$^\circ\text{C}$

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

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Collector-base breakdown voltage	$V_{(BR)CBO}^*$	900			V	$I_C=1\text{mA}$, $I_E=0$
Collector-emitter breakdown voltage	$V_{(BR)CEO}^*$	800			V	$I_C=5\text{mA}$, $I_B=0$
Emitter-base breakdown voltage	$V_{(BR)EBO}$	7			V	$I_E=1\text{mA}$, $I_C=0$
Collector cut-off current	I_{CBO}			10	μA	$V_{CB}=800\text{V}$, $I_E=0$
Emitter cut-off current	I_{EBO}			10	μA	$V_{EB}=5\text{V}$, $I_C=0$
DC current gain	h_{FE}^*	10		40		$V_{CE}=5\text{V}$, $I_C=100\text{mA}$
		8				$V_{CE}=5\text{V}$, $I_C=200\text{mA}$
Collector-emitter saturation voltage	$V_{CE(sat)}^*$			1.0	V	$I_C=200\text{mA}$, $I_B=40\text{mA}$
Base-emitter saturation voltage	$V_{BE(sat)}^*$			1.5	V	$I_C=200\text{mA}$, $I_B=40\text{mA}$
Transition frequency	f_T		250		MHz	$V_{CE}=10\text{V}$, $I_C=100\text{mA}$
Collector output capacitance	C_{ob}		35		pF	$V_{CB}=10\text{V}$, $I_E=0$, $f=1\text{MHz}$
Turn-on time	t_{on}			1.0	μS	$I_C=1\text{A}$, $I_{B1}=0.2\text{A}$, $I_{B2}=-0.4\text{A}$, $R_L=400\Omega$, $V_{CC}=400\text{V}$
Storage time	t_{stg}			3.0	μS	
Fall time	t_f			0.7	μS	

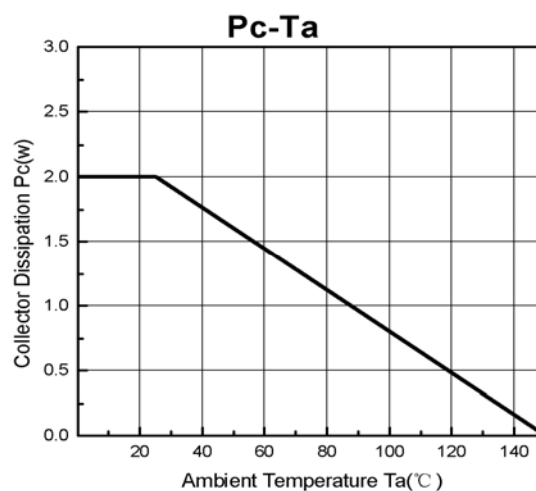
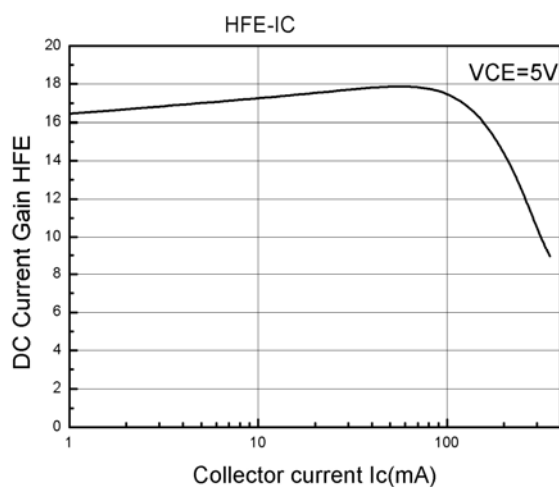
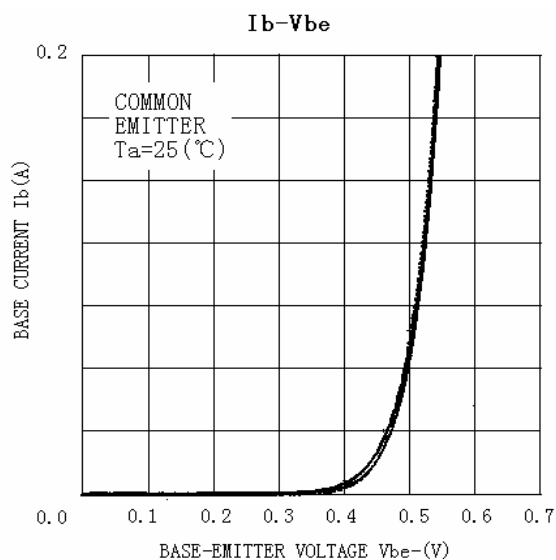
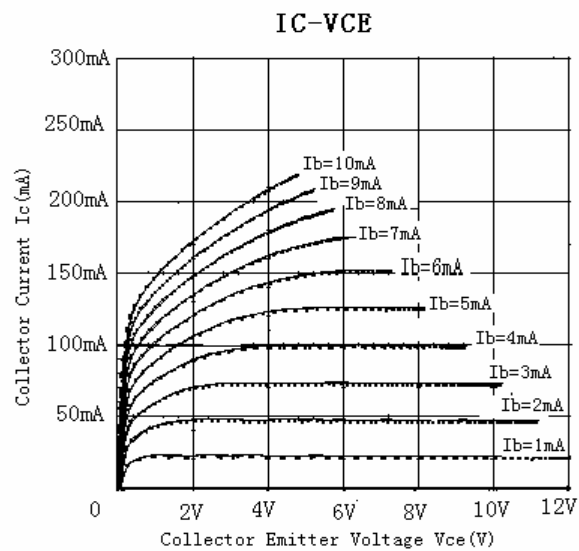
*pulse test.

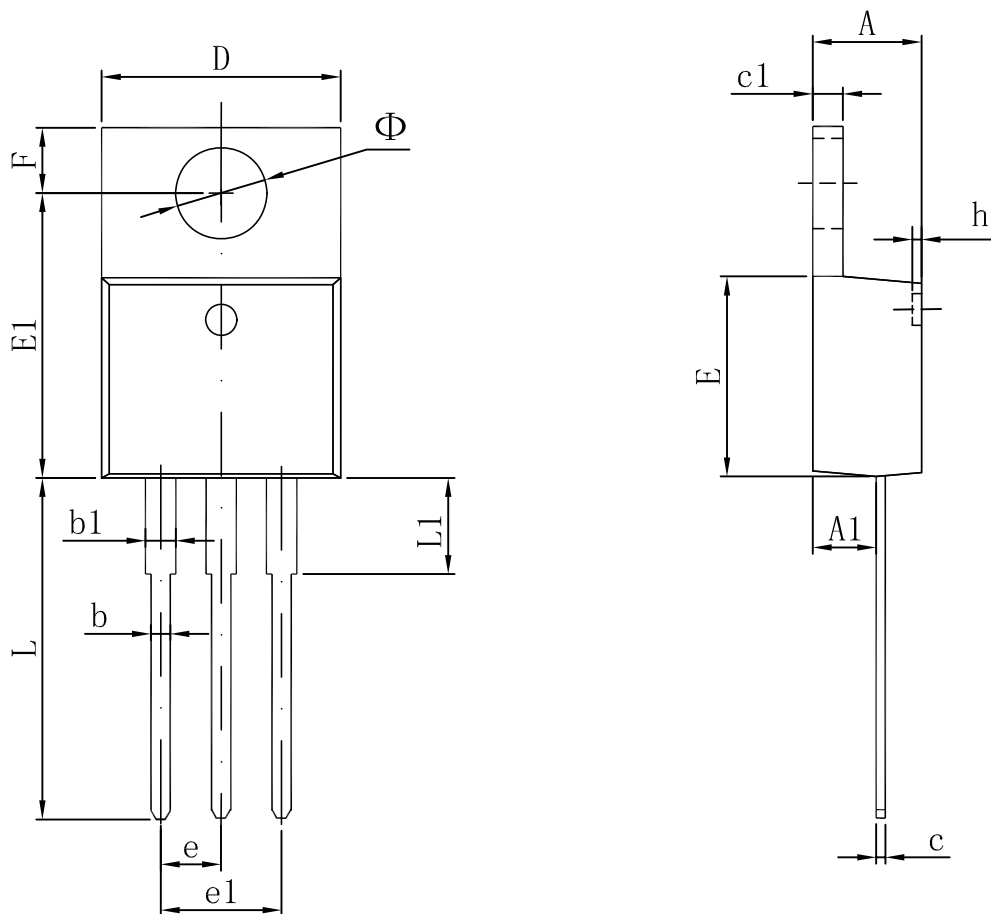
CLASSIFICATION OF h_{FE}

Rank	K	L	M
Range	10-20	15-30	20-40

BIPOLAR TRANSISTOR (NPN)

Typical Characteristics



BIPOLAR TRANSISTOR (NPN)
TO-220 Package Outline Dimensions


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
Φ	3.735	3.935	0.147	0.155