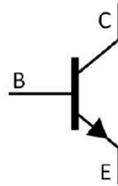


NPN Transistors

TO-252



Equivalent Circuit



PIN1 : Base

PIN 2,4 : Collector

PIN 3 : Emitter

Features

- Low $V_{CE(sat)}$, high current and high f_T , excellent linearity of h_{FE} , fast switching time.

Applications

- Relay drivers, high-speed inverters, general high-current switching applications.

h_{FE} Classifications Symbol	Q	R	S	T
h_{FE} Range	70~140	100~200	140~280	200~400

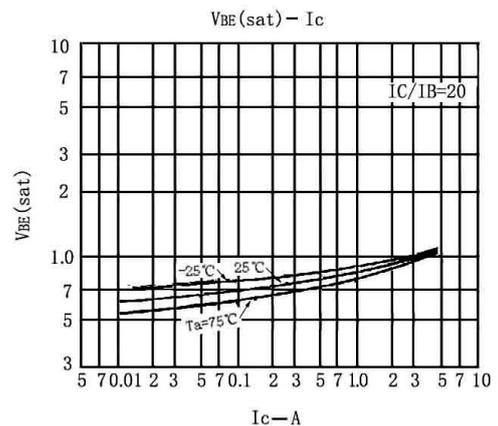
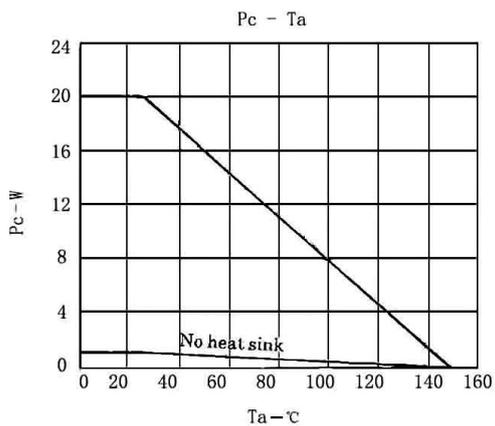
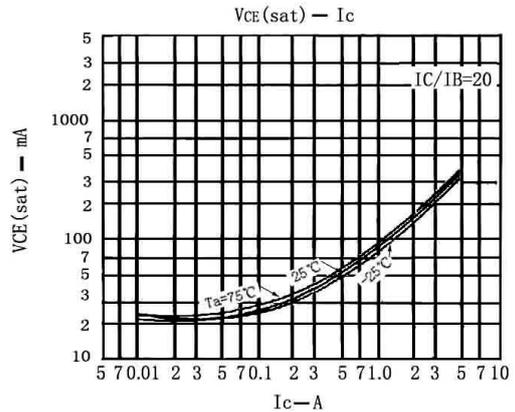
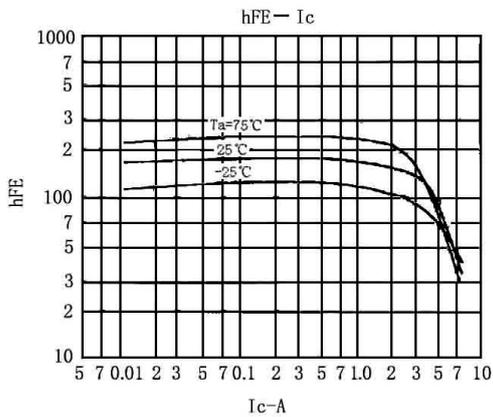
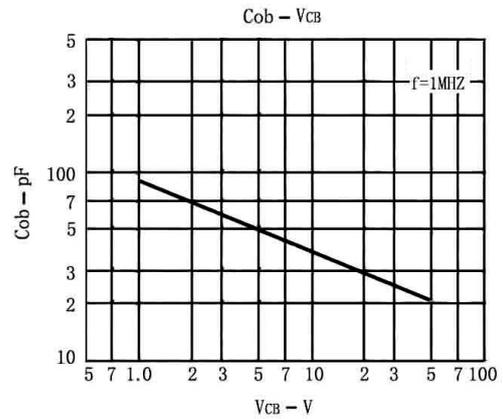
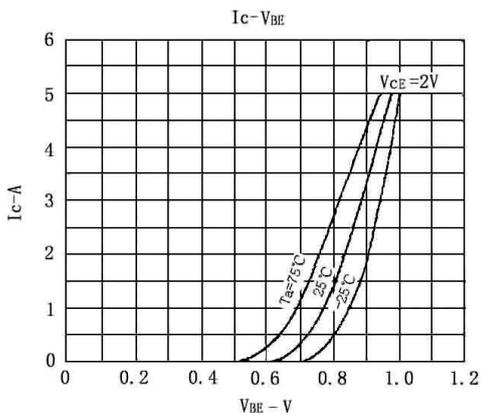
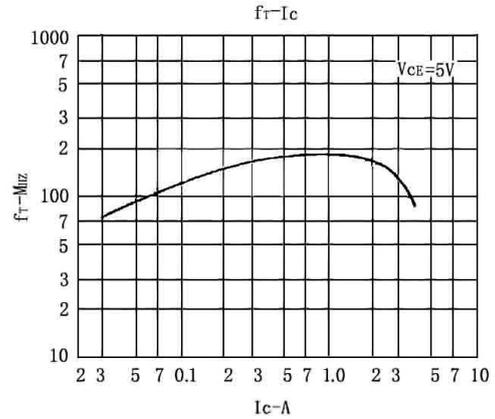
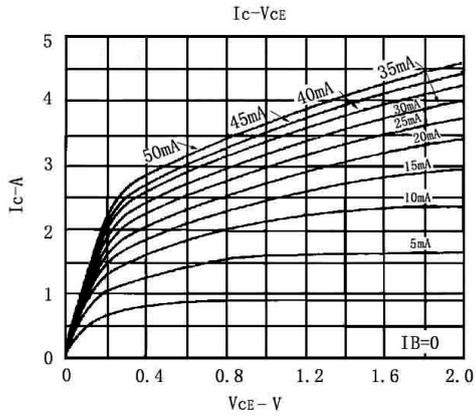
Absolute Maximum Ratings $T_c=25^{\circ}\text{C}$ unless otherwise noted

Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	60	V
Collector to Emitter Voltage	V_{CEO}	50	V
Emitter to Base Voltage	V_{EBO}	6	V
Collector Current - Continuous	I_C	5	A
Collector Current – Continuous(Pulse)	I_{CP}	8	A
Collector Power Dissipation	P_C	1.0	W
Collector Power Dissipation	$P_C(T_c=25^{\circ}\text{C})$	20	W
Junction Temperature	T_j	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-55~150	$^{\circ}\text{C}$

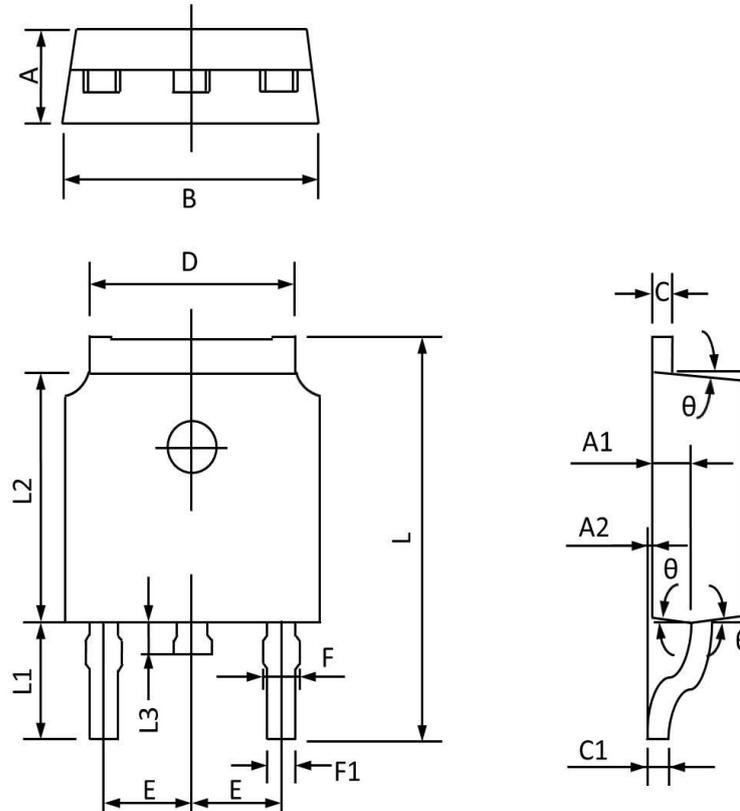
Off Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector to Base Breakdown Voltage	V_{CBO}	$I_C=10\mu\text{A}$ $I_E=0$	60			V
Collector to Emitter Breakdown Voltage	V_{CEO}	$I_C=1.0\text{mA}$ $R_{BE}=\infty$	50			V
Emitter to Base Breakdown Voltage	V_{EBO}	$I_E=10\mu\text{A}$ $I_C=0$	6			V
Collector Cut-Off Current	I_{CBO}	$V_{CB}=40\text{V}$ $I_E=0$			1.0	μA
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=4.0\text{V}$ $I_C=0$			1.0	μA
DC Current Gain	$h_{FE(1)}$	$V_{CE}=2.0\text{V}$ $I_C=0.5\text{A}$	70		400	
	$h_{FE(2)}$	$V_{CE}=2.0\text{V}$ $I_C=4.0\text{A}$	35			
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=3.0\text{A}$ $I_B=0.15\text{A}$		0.22	0.4	V
Base to Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=3.0\text{A}$ $I_B=0.15\text{A}$		0.95	1.3	V
Transition Frequency	f_T	$V_{CE}=5.0\text{V}$ $I_C=1.0\text{A}$		180		MHz
Collector output capacitance	C_{ob}	$V_{CB}=10\text{V}$ $f=1.0\text{MHz}$		40		pF
Turn-On Time	t_{on}	$I_C=10\text{I}_{B1}=-10\text{I}_{B2}=2.0\text{A}$		50		ns
Storage Time	t_{stg}			500		ns
Fall Time	t_f			20		ns

Typical Characteristics



TO252 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	2.400	2.200	0.094	0.087
A1	1.110	0.910	0.044	0.036
A2	0.150	0.000	0.006	0.000
B	6.800	6.400	0.268	0.252
C	0.580	0.450	0.023	0.018
C1	0.580	0.460	0.023	0.018
D	5.500	5.100	0.217	0.201
E	2.386	2.186	0.094	0.086
F	0.940	0.600	0.037	0.024
F1	0.860	0.500	0.034	0.020
L	10.400	9.400	0.409	0.370
L1	3.000	2.400	0.118	0.094
L2	6.200	5.400	0.244	0.213
L3	1.200	0.600	0.047	0.024
θ	9°	3°	9°	3°