



TO-92 Plastic-Encapsulate Transistors

M8050 TRANSISTOR (NPN)

● FEATURES

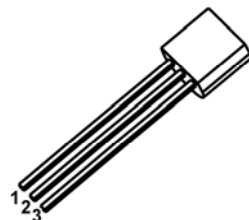
Power Dissipation

TO-92

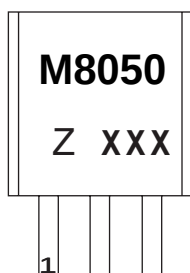
1.EMITTER

2. BASE

3. COLLECTOR



MARKING



M8050=Device code

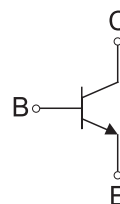
Z=Rank of h_{FE}

XXX=Code

GXX=Green molding compound device

CXX=Normal molding compound device

Equivalent Circuit



ORDERING INFORMATION

Part Number	Package	Packing Method	Pack Quantity
M8050	TO-92	Bulk	1000pcs/Bag
M8050-TA	TO-92	Tape	2000pcs/Box

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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	40	V
V_{CEO}	Collector-Emitter Voltage	25	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current -Continuous	800	mA
P_C	Collector Power Dissipation	625	mW
T_J, T_{stg}	Operation Junction and Storage Temperature Range	-55~+150	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS

$T_a=25^{\circ}\text{C}$ unless otherwise specified

Parameter	Symbol	Test conditions	Min	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0$	40		V
Collector-emitter breakdown voltage	$V_{(BR)CEO^*}$	$I_C=1\text{mA}, I_B=0$	25		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100\mu\text{A}, I_C=0$	6		V
Collector cut-off current	I_{CBO}	$V_{CB}=35\text{V}, I_E=0$		0.1	μA
Collector cut-off current	I_{CEO}	$V_{CE}=20\text{V}, I_B=0$		0.1	μA
DC current gain	$h_{FE(1)}$	$V_{CE}=1\text{V}, I_C=5\text{mA}$	45		
	$h_{FE(2)}$	$V_{CE}=1\text{V}, I_C=100\text{mA}$	80	400	
	$h_{FE(3)}$	$V_{CE}=1\text{V}, I_C=800\text{mA}$	40		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=800\text{mA}, I_B=80\text{mA}$		0.5	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=800\text{mA}, I_B=80\text{mA}$		1.2	V
Transition frequency	f_T	$V_{CE}=6\text{V}, I_C=20\text{mA}, f=30\text{MHz}$	150		MHz

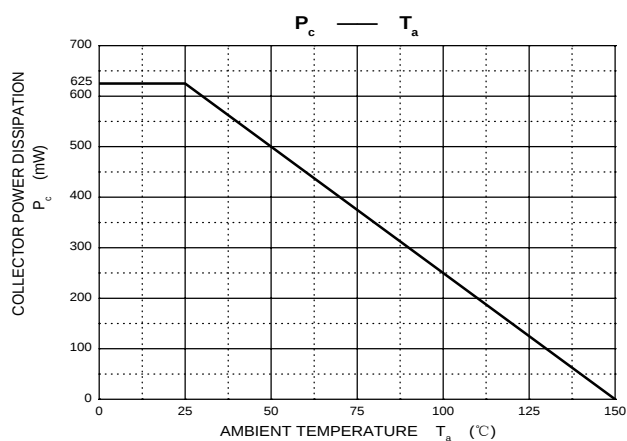
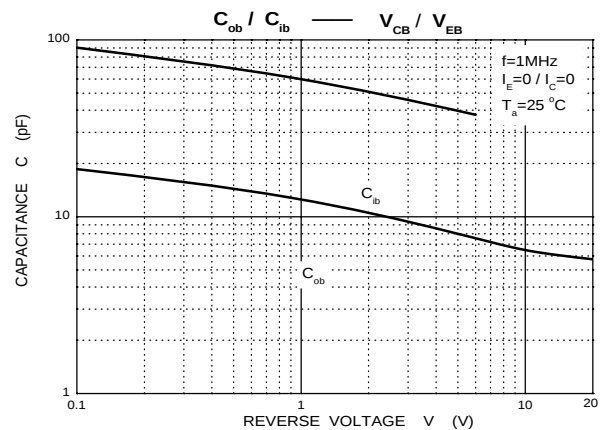
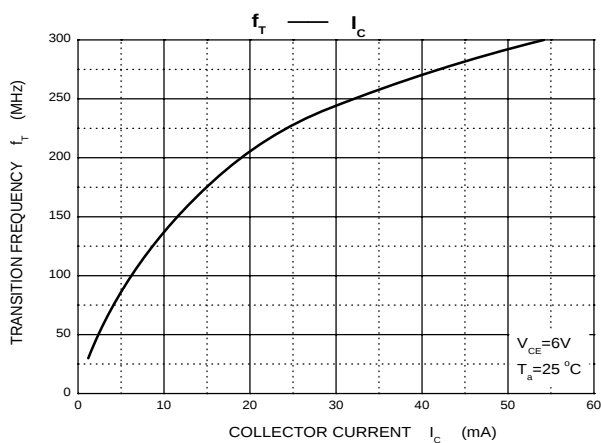
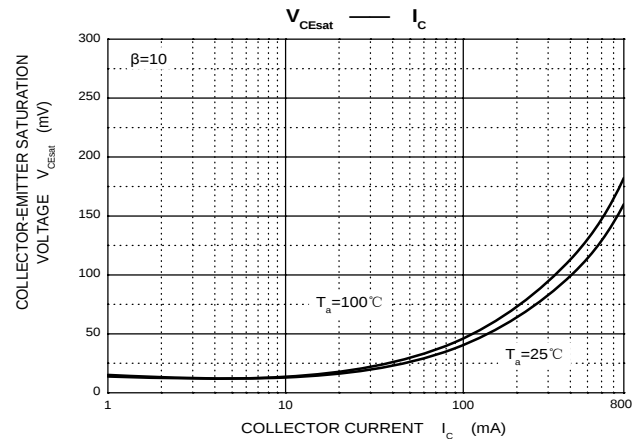
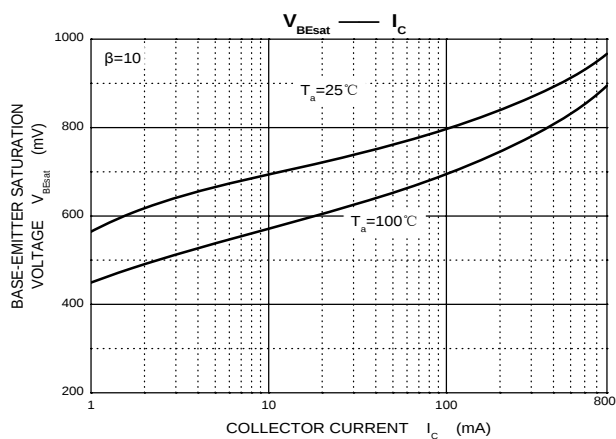
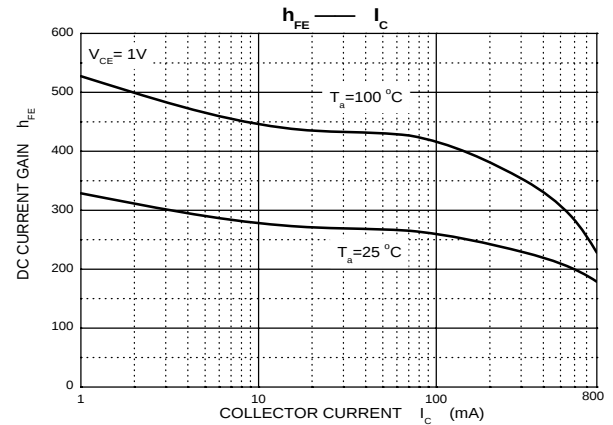
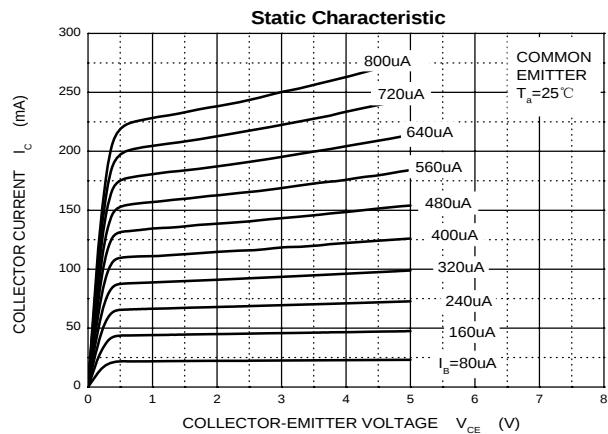
* Pulse Test : pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

CLASSIFICATION OF $h_{FE(2)}$

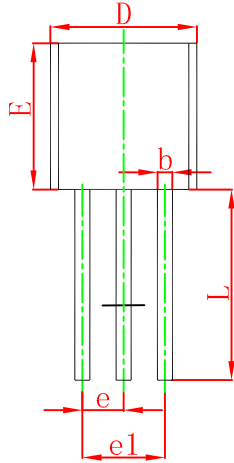
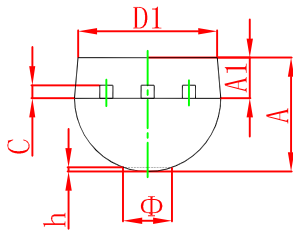
Rank	B	C	D	D3
Range	80-160	120-200	160-300	300-400

Typical Characteristics

M8050

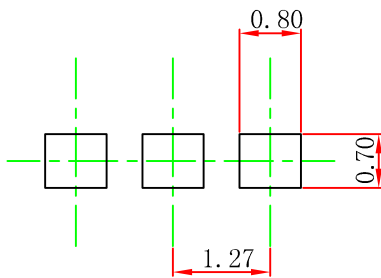


TO-92 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.300	4.700	0.169	0.185
D1	3.430		0.135	
E	4.300	4.700	0.169	0.185
e	1.270 TYP		0.050 TYP	
e1	2.440	2.640	0.096	0.104
L	14.100	14.500	0.555	0.571
Φ		1.600		0.063
h	0.000	0.380	0.000	0.015

TO-92 Suggested Pad Layout



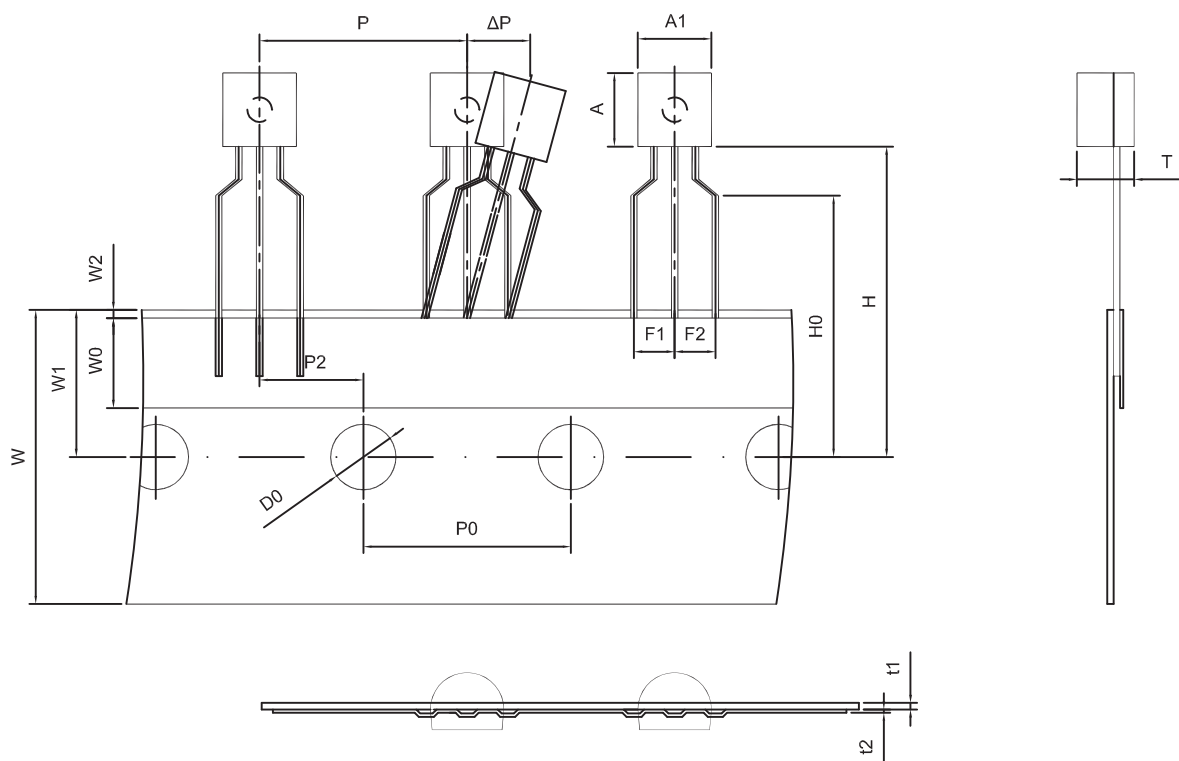
Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

NOTICE

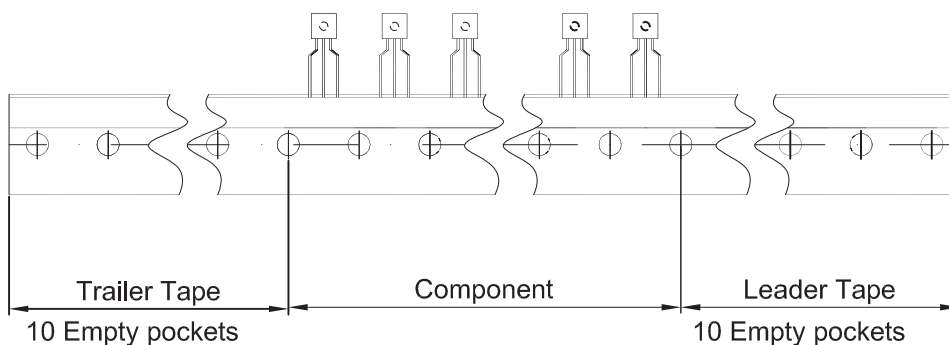
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TO-92 PACKAGE TAPING DIMENSION



Dimiensions are in millimeter

A1	A	T	P	P0	P2	F1	F2	W
4.5	4.5	3.5	12.7	12.7	6.35	2.5	2.5	18.0
W0	W1	W2	H	H0	D0	t1	t2	ΔP
6.0	9.0	1.0 MAX.	19.0	16.0	4.0	0.4	0.2	0



Package	Box	Box Size(mm)	Carton	Carton Size(mm)
TO-92	2000 pcs	333×162×43	20,000 pcs	350×340×250