

# 2N3702 through 2N3706 MPS3702 through MPS3706

PNP . NPN SILICON GENERAL PURPOSE AF TRANSISTORS



THE ABOVE TYPES ARE SILICON PLANAR EPITAXIAL TRANSISTORS FOR GENERAL PURPOSE AF MEDIUM POWER APPLICATIONS. THE 2N3702 SERIES ARE SUPPLIED IN CASE TO-92B. THE MPS3702 SERIES ARE SUPPLIED IN CASE TO-92A.

CASE TO-92B

CASE TO-92A



ECB



EBC

ABSOLUTE MAXIMUM RATINGS		(PNP)	(PNP)	(NPN)	(NPN)
		2N/MPS3702	2N/MPS3703	2N/MPS3704 2N/MPS3705	2N/MPS3706
Collector-Base Voltage	V <sub>CB0</sub>	40V	50V	50V	40V
Collector-Emitter Voltage	V <sub>CEO</sub>	25V	30V	30V	20V
Emitter-Base Voltage	V <sub>EB0</sub>	5V	5V	5V	5V
Collector Current	I <sub>C</sub>	0.2A	0.2A	0.8A	0.8A
Collector Peak Current	I <sub>CM</sub>	0.6A	0.6A		
Total Power Dissipation (T <sub>C</sub> ≤ 25°C)	P <sub>tot</sub>		1W		
			360mW		
Operating Junction & Storage Temperature	T <sub>j</sub> , T <sub>stg</sub>			-55 to 150°C	

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)**

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS
Collector-Base Breakdown Voltage	BV <sub>CB0</sub>	↑			V	I <sub>C</sub> =0.1mA I <sub>E</sub> =0
Collector-Emitter Breakdown Voltage	LV <sub>CEO</sub> *	Note 1			V	I <sub>C</sub> =10mA I <sub>B</sub> =0
Emitter-Base Breakdown Voltage	BV <sub>EB0</sub>	↓			V	I <sub>E</sub> =0.1mA I <sub>C</sub> =0
Collector Cutoff Current	I <sub>CB0</sub>			100	nA	V <sub>CB</sub> =20V I <sub>E</sub> =0
Emitter Cutoff Current	I <sub>EB0</sub>			100	nA	V <sub>EB</sub> =3V I <sub>C</sub> =0
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub> *		0.1	0.25	V	I <sub>C</sub> =50mA I <sub>B</sub> =5mA
2N/MPS3702,3			0.12	0.6	V	I <sub>C</sub> =100mA I <sub>B</sub> =5mA
2N/MPS3704			0.15	0.8	V	I <sub>C</sub> =100mA I <sub>B</sub> =5mA
2N/MPS3705			0.15	1	V	I <sub>C</sub> =100mA I <sub>B</sub> =5mA
2N/MPS3706						
Base-Emitter Voltage	V <sub>BE</sub> *	0.6	0.78	1	V	I <sub>C</sub> =50mA V <sub>CE</sub> =5V
2N/MPS3702,3		0.5	0.83	1	V	I <sub>C</sub> =100mA V <sub>CE</sub> =2V
2N/MPS3704,5,6						
D.C. Current Gain	H <sub>FE</sub> *		60	300		I <sub>C</sub> =50mA V <sub>CE</sub> =5V
2N/MPS3702			30	150		I <sub>C</sub> =50mA V <sub>CE</sub> =5V
2N/MPS3703			100	300		I <sub>C</sub> =50mA V <sub>CE</sub> =2V
2N/MPS3704						

For p-n-p devices, voltage and current values are negative.

**MICRO ELECTRONICS LTD.**

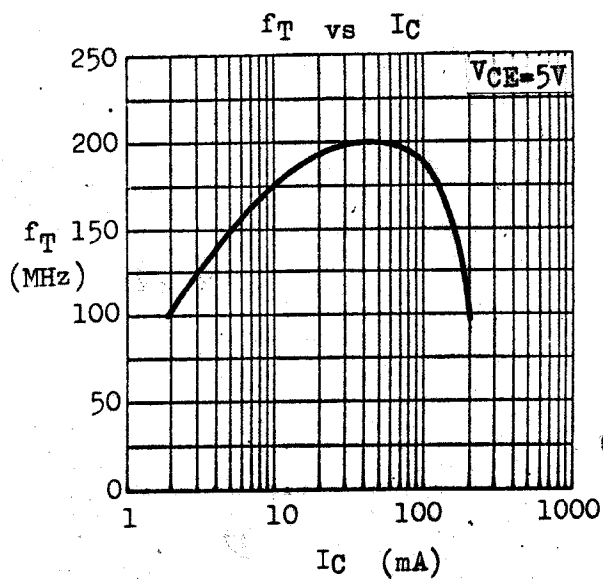
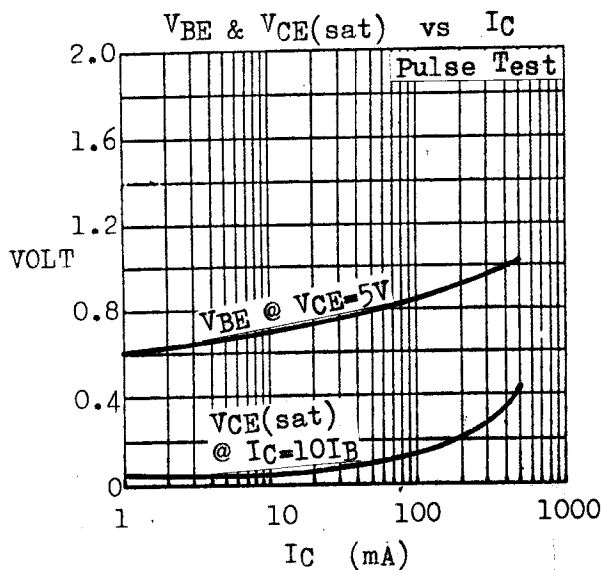
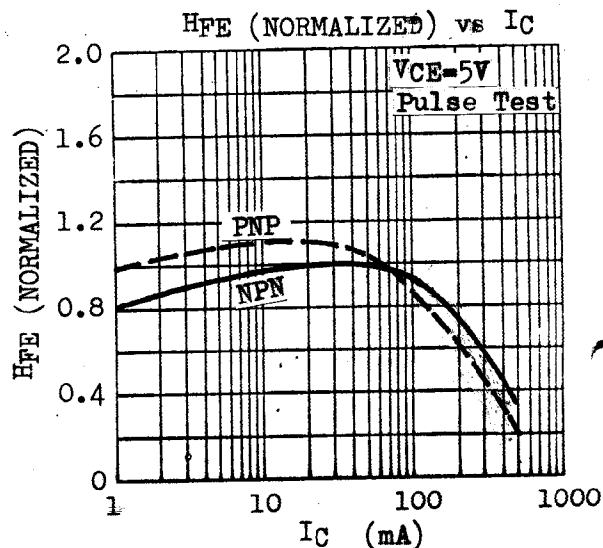
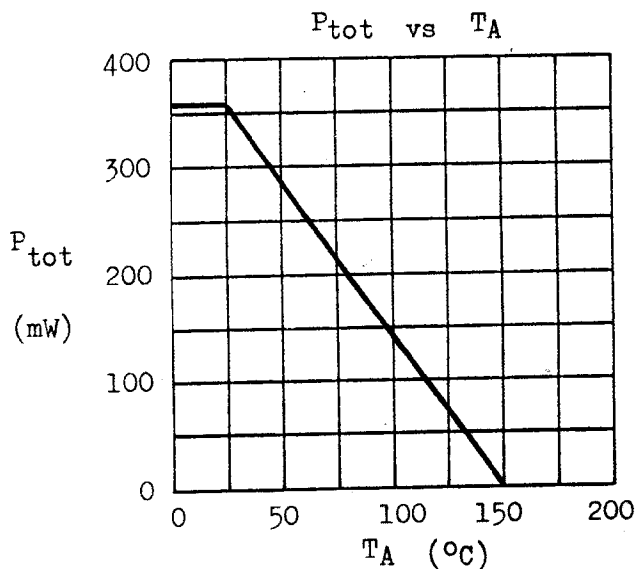
38 HUNG TO ROAD, KWUN TONG, HONG KONG. TELEX 43510  
 KWUN TONG P. O. BOX 69477 CABLE ADDRESS "MICROTRON"  
 TELEPHONE:- 3-430181-6 3-893363, 3-892423  
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PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS	
D.C. Current Gain	2N/MPS3705 2N/MPS3706	HFE *	50 30	150 600		IC=50mA VCE=2V IC=50mA VCE=2V	
Current Gain-Bandwidth Product	2N/MPS3702,3 2N/MPS3704,5,6	f <sub>T</sub>	100		MHz	IC=50mA VCE=5V	
			100		MHz	IC=50mA VCE=2V	
Collector-Base Capacitance	2N/MPS3702,3 2N/MPS3704,5,6	C <sub>ob</sub>		5	12	pF	V <sub>CB</sub> =10V IE=0
				4	12	pF	f=1MHz

Note 1 : equal to the values of absolute maximum ratings.

\* Pulse Test : Pulse Width=0.3mS, Duty Cycle=1%

TYPICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)



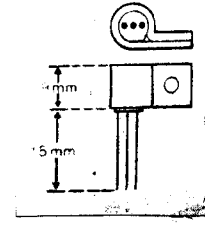
TRANSISTORS EQUIVALENT TO 2N/MPS3702 FAMILY

THE FOLLOWING TRANSISTORS, WHICH ARE CLOSELY EQUIVALENT TO THE 2N/MPS3702 FAMILY, ARE ALSO AVAILABLE.

TO-92B

TO-92A

WITH X-67 HEAT SINK



SPECIFICATIONS AT  $T_A=25^\circ\text{C}$

For p-n-p devices, voltage and current values are negative.

TYPE	POLARITY	CASE ( $P_{tot}$ )	$V_{CE0}$ (V)	$V_{EBO}$ (V)	$I_{CBO}$ @ $V_{CB}$ ( $\mu\text{A}$ ) (V)	$H_{FE}$ @ $I_C/V_{CE}$ (mA) (V)	$V_{CE(sat)}$ @ $I_C/I_B$ (V) (mA)(mA)	$f_T$ @ $I_C$ (MHz)(mA)
			min	min	max	min-max	max	min
2N3402	NPN	TO-92B with X-67 Heat Sink (560mW)	25	5	0.1 @ 25	75-225 @ 2/4.5	0.3 @ 50/3	
2N3403			25	5	0.1 @ 25	180-540 @ 2/4.5	0.3 @ 50/3	
2N3404			50	5	0.1 @ 50	75-225 @ 2/4.5	0.3 @ 50/3	
2N3405			50	5	0.1 @ 50	180-540 @ 2/4.5	0.3 @ 50/3	
2N4425			40	5	*0.03 @ 40	180-540 @ 2/4.5	0.3 @ 50/3	
2N3414	NPN	TO-92B (360mW)	25	5	0.1 @ 25	75-225 @ 2/4.5	0.3 @ 50/3	
2N3415			25	5	0.1 @ 25	180-540 @ 2/4.5	0.3 @ 50/3	
2N3416			50	5	0.1 @ 50	75-225 @ 2/4.5	0.3 @ 50/3	
2N3417			50	5	0.1 @ 50	180-540 @ 2/4.5	0.3 @ 50/3	
2N4424			40	5	*0.03 @ 40	180-540 @ 2/4.5	0.3 @ 50/3	
2N5220	NPN	TO-92A (350mW)	15	3	0.1 @ 10	25- @ 10/10 30-600 @ 50/10	0.5 @ 150/15	100 @ 20
2N5221	PNP		15	3	0.1 @ 10	25- @ 10/10 30-600 @ 50/10	0.5 @ 150/15	100 @ 20
2N5225	NPN		25	4	0.3 @ 15	25- @ 10/10 30-600 @ 50/10	0.8 @ 100/10	50 @ 20
2N5226	PNP		25	4	0.3 @ 15	25- @ 10/10 30-600 @ 50/10	0.8 @ 100/10	50 @ 20
2N5354	PNP	TO-92B (360mW)	25	4	*0.1 @ 25	40-120 @ 50/1 20- @ 300/5	0.25 @ 50/2.5 1.0 @ 300/30	
2N5355	PNP		25	4	*0.1 @ 25	100-300 @ 50/1 40- @ 300/5		
2N5356	PNP		25	4	*0.1 @ 25	250-500 @ 50/1 75- @ 300/5		
2N5365	PNP	TO-92B (360mW)	40	4	*0.1 @ 40	40-120 @ 50/1 20- @ 300/5	0.25 @ 50/2.5 1.0 @ 300/30	
2N5366	PNP		40	4	*0.1 @ 40	100-300 @ 50/1 40- @ 300/5		
2N5367	PNP		40	4	*0.1 @ 40	250-500 @ 50/1 75- @ 300/5		

\* ICES

2.78.6500B.0650B

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TYPE	POLARITY	CASE (P <sub>tot</sub> )	LVCEO (V)	BVEBO (V)	ICES @ VCE ( $\mu$ A) (V)	HFE @ IC/VCE (mA)(V)	VCE(sat) @ IC/IB (V) (mA)(mA)	f <sub>T</sub> @ IC (MHz)(mA)
			min	min	max	min-max	max	min
2N5418	NPN	TO-92B (400mW)	25	4	0.1 @ 25	40-120 @ 50/1 20- @ 300/5	0.25 @ 50/2.5 1.0 @ 300/30	
2N5419	NPN		25	4	0.1 @ 25	100-300 @ 50/1 40- @ 300/5		
2N5420	NPN		25	4	0.1 @ 25	250-500 @ 50/1 75- @ 300/5		
2N5447	PNP	<p>These are TO-92F transistors. Their electrical characteristics are exactly identical to 2N3702, 3, 4, 5, 6 respectively.</p>						
2N5448	PNP							
2N5449	NPN							
2N5450	NPN							
2N5451	NPN							

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