

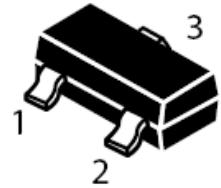
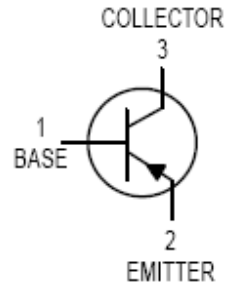
PNP General Purpose Transistor

FEATURES

- For switching and amplifier applications.
- Complementary NPN Type Available (MMBT3904)

MECHANICAL DATA

- Case: SOT-23 Plastic
- Case material: "Green" molding compound, UL flammability classification 94V-0, (No Br. Sb. Cl)
- Lead Free in RoHS 2011/65/EU Compliant



Maximum Ratings @ $T_A = 25^\circ\text{C}$

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current -Continuous	I_C	-200	mA
Collector Power Dissipation	P_C	200	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556 (1) 417 (2)	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55~+150	$^\circ\text{C}$

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Collector-base breakdown voltage	$I_C = -10\mu\text{A}, I_E = 0$	V_{CBO}	-40			V
Collector-emitter breakdown voltage	$I_C = -1\text{mA}, I_B = 0$	V_{CEO}	-40			V
Emitter-base breakdown voltage	$I_E = -10\mu\text{A}, I_C = 0$	V_{EBO}	-5			V
Collector-base cut-off current	$V_{CB} = -40\text{V}, I_E = 0$	I_{CBO}			-0.1	μA
Collector-base cut-off current	$V_{CE} = -30\text{V}, V_{BE(off)} = -3\text{V}$	I_{CEX}			-50	nA
Emitter-base cut-off current	$V_{EB} = -5\text{V}, I_C = 0$	I_{EBO}			-0.1	μA
DC current gain	$V_{CE} = -1\text{V}, I_C = -10\text{mA}$	h_{FE1}	100		300	
	$V_{CE} = -1\text{V}, I_C = -50\text{mA}$	h_{FE2}	60			
	$V_{CE} = -1\text{V}, I_C = -100\text{mA}$	h_{FE3}	30			
Collector-emitter saturation voltage	$I_C = -50\text{mA}, I_B = -5\text{mA}$	$V_{CE(sat)}$			-0.4	V
Base-emitter saturation voltage	$I_C = -50\text{mA}, I_B = -5\text{mA}$	$V_{BE(sat)}$			-0.95	V
Transition frequency	$V_{CE} = -20\text{V}, I_C = -10\text{mA}, f = 100\text{MHz}$	f_T	300			MHz
Delay time	$V_{CC} = -3\text{V}, V_{BE} = -0.5\text{V}, I_C = -10\text{mA}, I_{B1} = -I_{B2} = -1\text{mA}$	T_d			35	nS
Rise time		T_r			35	nS
Storage time	$V_{CC} = -3\text{V}, I_C = -10\text{mA}, I_{B1} = -I_{B2} = -1\text{mA}$	T_s			225	nS
Fall time		T_f			75	nS

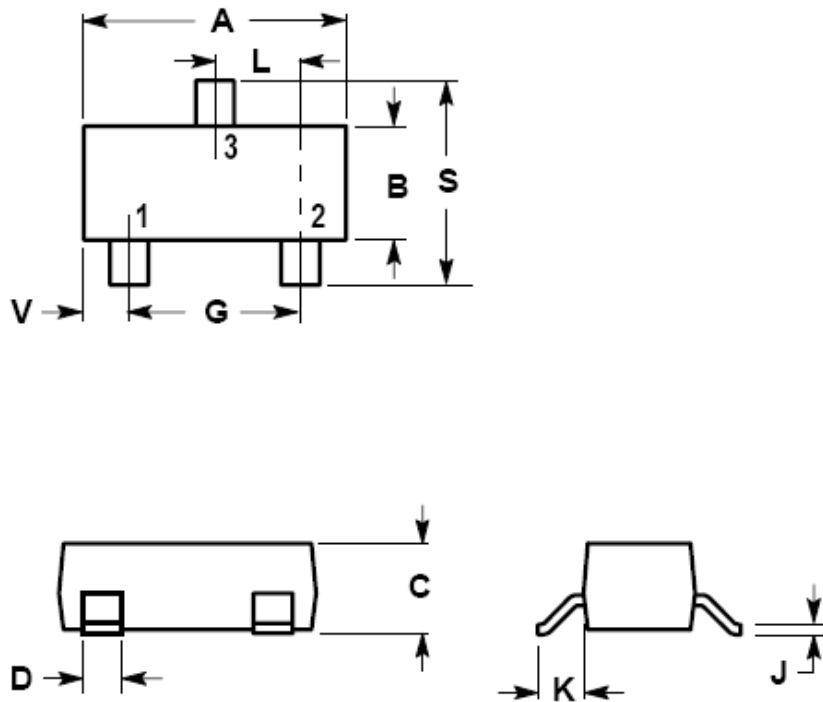
REV. 5, Aug-2014, KSPR12

Note:

(1) Device mounted on FR-5 board, 1.0 x 0.75 x 0.062 in.

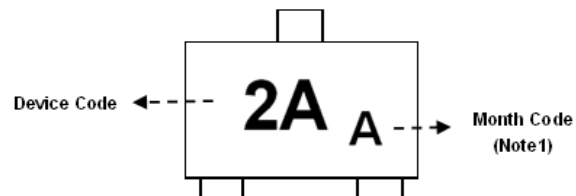
(2) Device mounted on Alumina substrate, 0.4 x 0.3 x 0.024 in. 99.5% alumina.

SOT-23 Outline Dimension



Symbol	Dimension In Millimeters	
	Min	Max.
A	2.80	3.04
B	1.20	1.40
C	0.89	1.11
D	0.37	0.50
G	1.78	2.04
J	0.085	0.177
K	0.35	0.69
L	0.89	1.02
S	2.10	2.64
V	0.45	0.60

Device Marking:

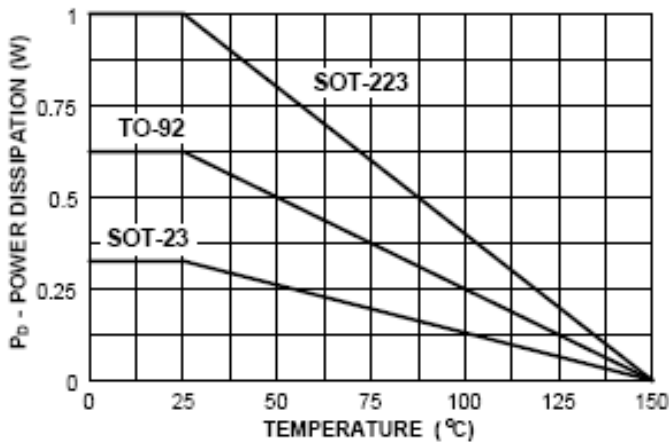


Note1:

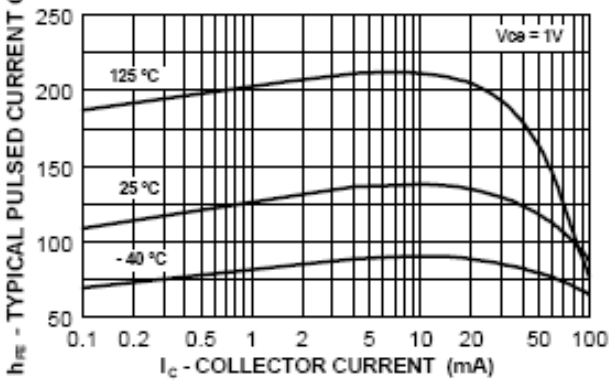
Odd Year	J	O	L	C	K	B	P	D	M	E	G	F
Even Year	W	N	Y	T	R	H	A	I	U	X	Z	S

Electrical characteristic curves

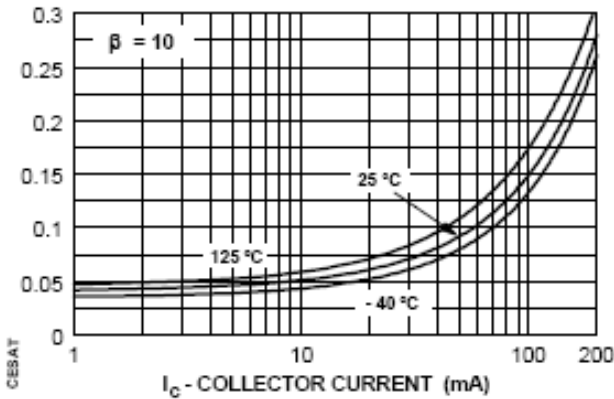
Power Dissipation vs Ambient Temperature



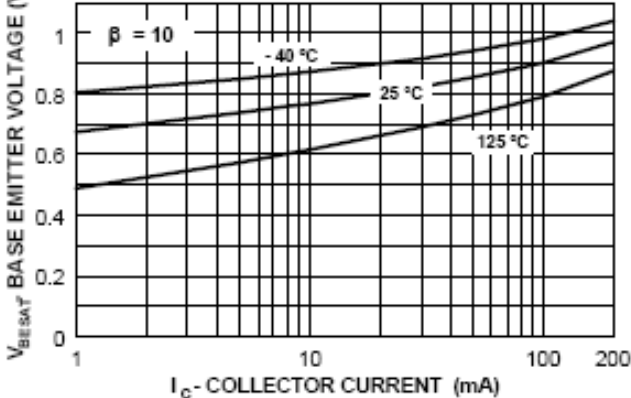
Typical Pulsed Current Gain vs Collector Current



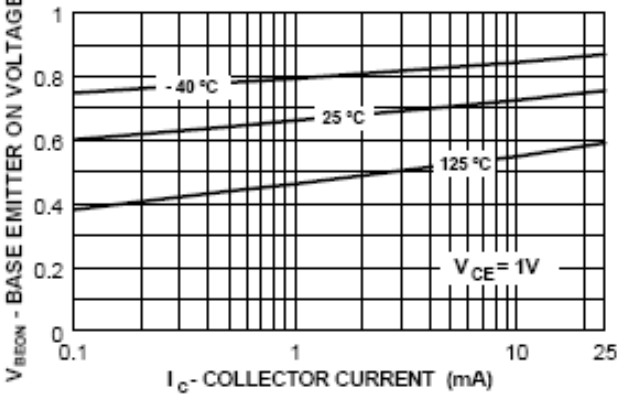
Collector-Emitter Saturation Voltage vs Collector Current



Base-Emitter Saturation Voltage vs Collector Current

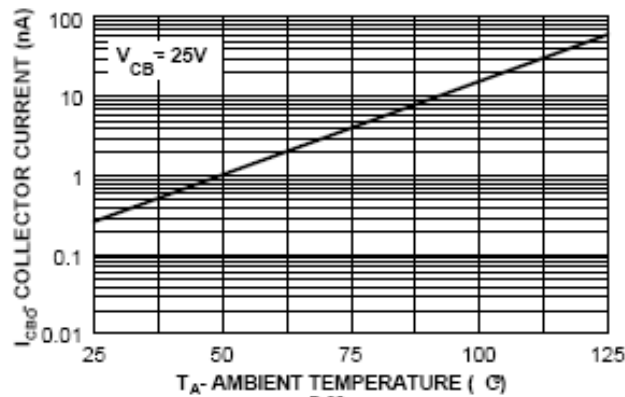


Base Emitter ON Voltage vs Collector Current

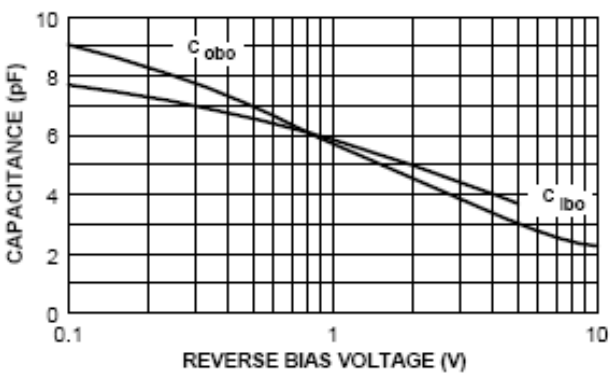


Electrical characteristic curves

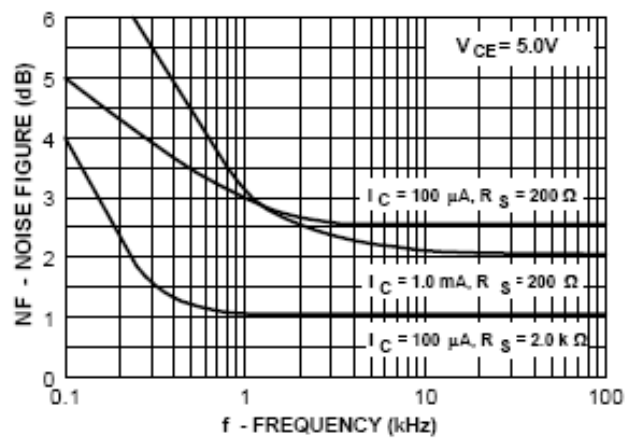
Collector-Cutoff Current
vs. Ambient Temperature



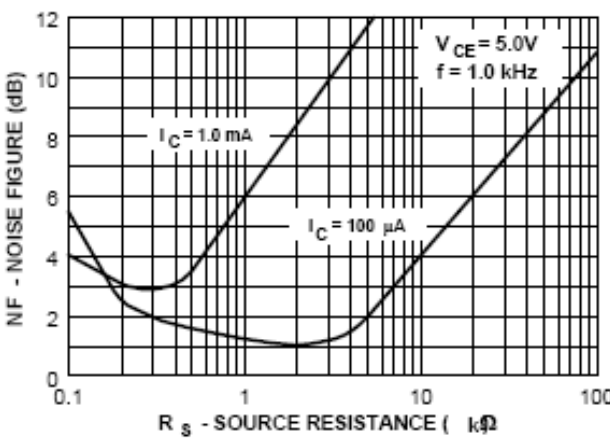
Common-Base Open Circuit
Input and Output Capacitance
vs Reverse Bias Voltage



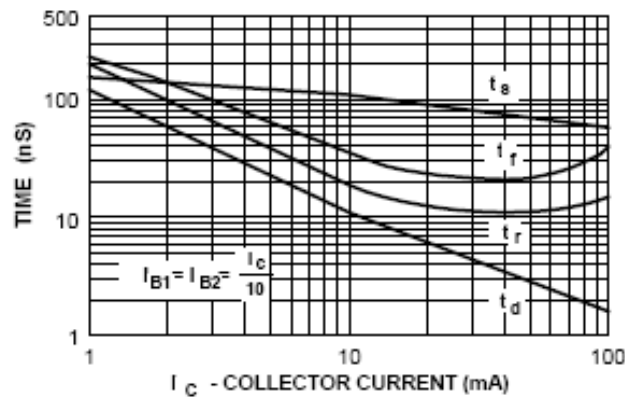
Noise Figure vs Frequency



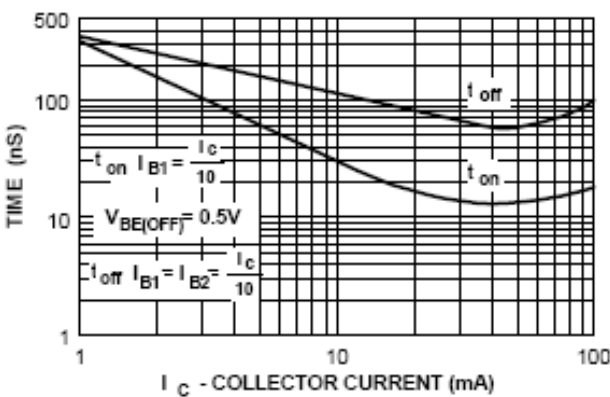
Noise Figure vs Source Resistance



Switching Times
vs Collector Current



Turn On and Turn Off Times
vs Collector Current



Important Notice and Disclaimer

LSC reserves the right to make changes to this document and its products and specifications at any time without notice. Customers should obtain and confirm the latest product information and specifications before final design, purchase or use.

LSC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does LSC assume any liability for application assistance or customer product design. LSC does not warrant or accept any liability with products which are purchased or used for any unintended or unauthorized application.

No license is granted by implication or otherwise under any intellectual property rights of LSC.

LSC products are not authorized for use as critical components in life support devices or systems without express written approval of LSC.