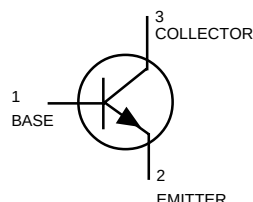


Amplifier Transistors

NPN Silicon



MMBT6428LT1
MMBT6429LT1



CASE 318-08, STYLE 6
SOT-23 (TO-236AB)

MAXIMUM RATINGS

Rating	Symbol	Value		Unit
		6428LT1	6429LT1	
Collector-Emitter Voltage	V_{CEO}	50	45	Vdc
Collector-Base Voltage	V_{CBO}	60	55	Vdc
Emitter-Base Voltage	V_{EBO}	6.0		Vdc
Collector Current — Continuous	I_C	200		mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, (1) $T_A = 25^\circ\text{C}$	P_D	225	mW
Derate above 25°C		1.8	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^\circ\text{C/W}$
Total Device Dissipation Alumina Substrate, (2) $T_A = 25^\circ\text{C}$	P_D	300	mW
Derate above 25°C		2.4	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C/W}$
Junction and Storage Temperature	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

DEVICE MARKING

MMBT6428LT1 = 1KM, MMBT6429LT1 = 1L

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

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage(3) ($I_C = 1.0 \text{ mAdc}, I_B = 0$)	$V_{(BR)CEO}$			Vdc
MMBT6428		50	—	
($I_C = 1.0 \text{ mAdc}, I_B = 0$)	MMBT6429	45	—	
Collector-Base Breakdown Voltage ($I_C = 0.1 \text{ mAdc}, I_E = 0$)	$V_{(BR)CBO}$			Vdc
MMBT6428		60	—	
($I_C = 0.1 \text{ mAdc}, I_E = 0$)	MMBT6429	55	—	
Collector Cutoff Current ($V_{CE} = 30 \text{ Vdc}, I_B = 0$)	I_{CBO}		0.1	μAdc
Collector Cutoff Current ($V_{CB} = 30 \text{ Vdc}, I_E = 0$)	I_{CBO}		0.01	μAdc
Emitter Cutoff Current ($V_{EB} = 5.0 \text{ Vdc}, I_C = 0$)	I_{EBO}		0.01	μAdc

1. FR-5 = $1.0 \times 0.75 \times 0.062 \text{ in.}$

2. Alumina = $0.4 \times 0.3 \times 0.024 \text{ in.}$ 99.5% alumina.

MMBT6428LT1 MMBT6429LT1

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

Characteristic	Symbol	Min	Max	Unit
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ON CHARACTERISTICS

DC Current Gain ($I_C = 0.01 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$)	h_{FE}	250	—	—
	MMBT6428	250	—	—
	MMBT6429	500	—	—
($I_C = 0.1 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$)		250	650	
	MMBT6428	250	650	
	MMBT6429	500	1250	
($I_C = 1.0 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$)		250	—	
	MMBT6428	250	—	
	MMBT6429	500	—	
($I_C = 10 \text{ mAdc}$, $V_{CE} = 5.0 \text{ Vdc}$)		250	—	
	MMBT6428	250	—	
	MMBT6429	500	—	
Collector–Emitter Saturation Voltage ($I_C = 10 \text{ mAdc}$, $I_B = 0.5 \text{ mAdc}$)	$V_{CE(sat)}$	—	0.2	Vdc
($I_C = 100 \text{ mAdc}$, $I_B = 0.5 \text{ mAdc}$)		—	0.6	
Base–Emitter On Voltage ($I_C = 1.0 \text{ mAdc}$, $V_{CE} = 5.0 \text{ mAdc}$)	$V_{BE(on)}$	0.56	0.66	Vdc

SMALL–SIGNAL CHARACTERISTICS

Current Gain–Bandwidth Product ($V_{CE} = 5.0 \text{ Vdc}$, $I_C = 1.0 \text{ mAdc}$, $f = 100 \text{ MHz}$)	f_T	100	700	MHz
Output Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f = 1.0 \text{ MHz}$)	C_{obo}	—	3.0	pF
Input Capacitance ($V_{EB} = 0.5 \text{ Vdc}$, $I_C = 0$, $f = 1.0 \text{ MHz}$)	C_{ibo}	—	8.0	pF

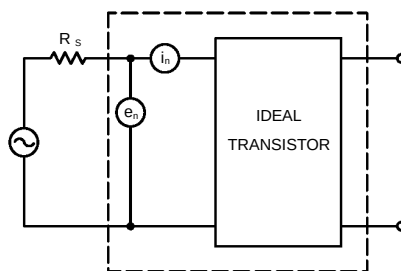


Figure 1. Transistor Noise Model

MMBT6428LT1 MMBT6429LT1

NOISE CHARACTERISTICS

($V_{CE} = 5.0 \text{ Vdc}$, $T_A = 25^\circ\text{C}$)

NOISE VOLTAGE

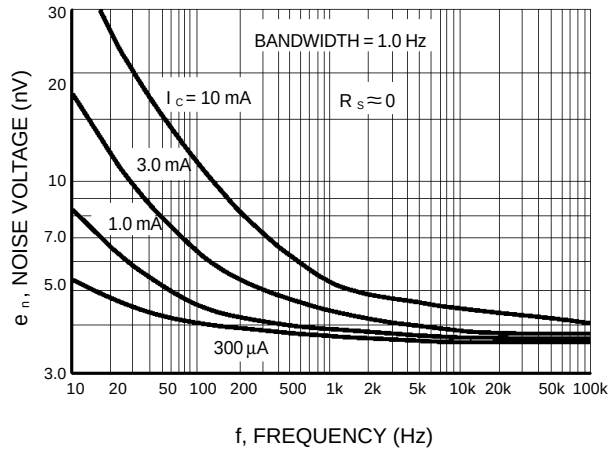


Figure 2. Effects of Frequency

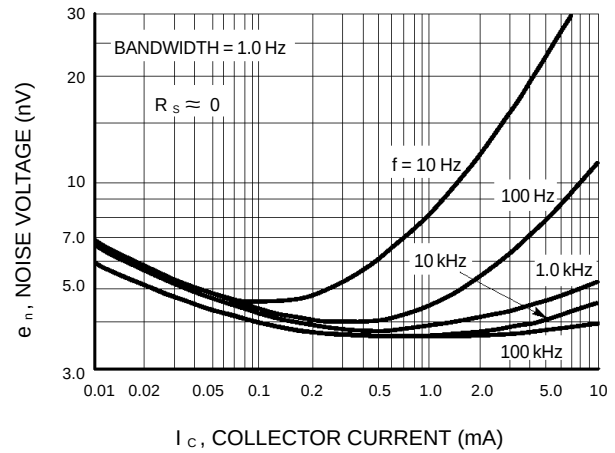


Figure 3. Effects of Collector Current

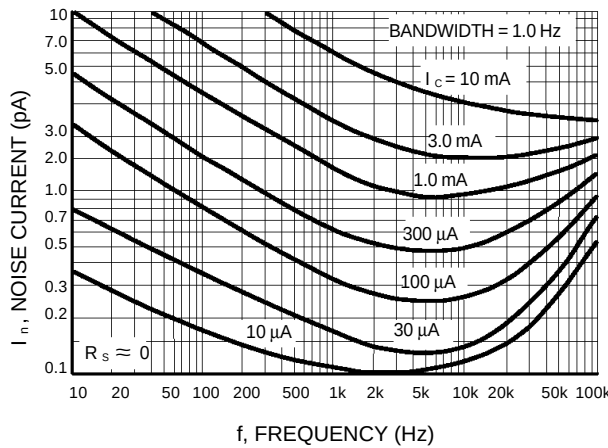


Figure 4. Noise Current

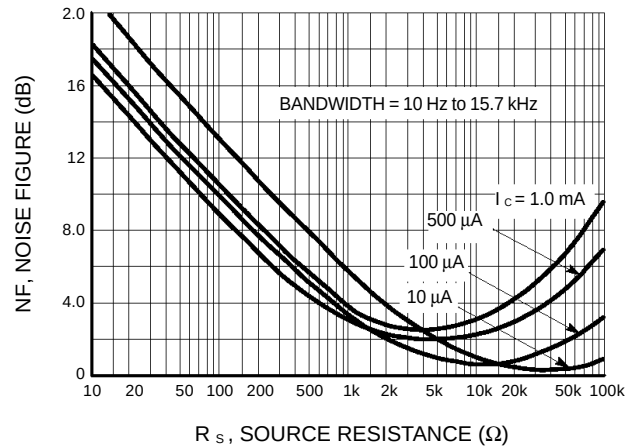


Figure 5. Wideband Noise Figure

100 Hz NOISE DATA

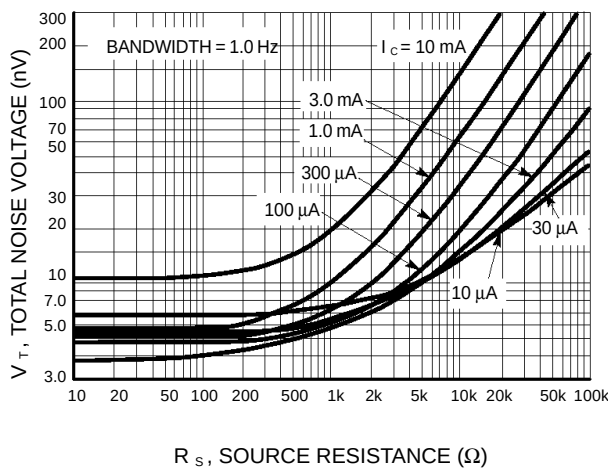


Figure 6. Total Noise Voltage

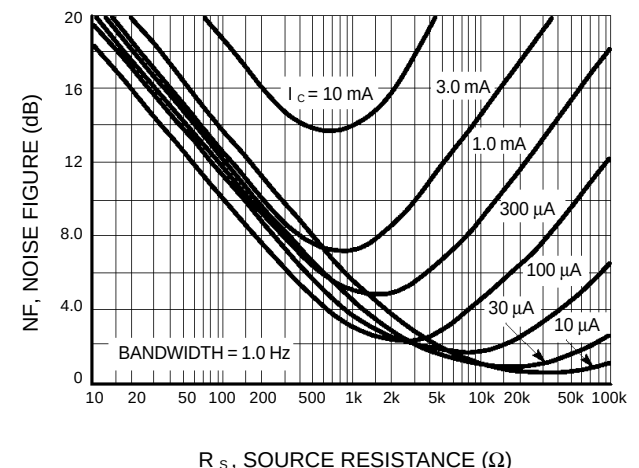


Figure 7. Noise Figure

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