

MMBT6427LT1

Preferred Device

Darlington Transistor NPN Silicon

勝特力材料 886-3-5753170
 勝特力电子(上海) 86-21-54151736
 勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)



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Features

- Pb-Free Package is Available

MAXIMUM RATINGS

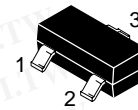
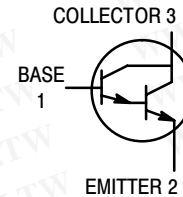
Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	40	Vdc
Collector–Base Voltage	V_{CBO}	40	Vdc
Emitter–Base Voltage	V_{EBO}	12	Vdc
Collector Current – Continuous	I_C	500	mAdc

THERMAL CHARACTERISTICS

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

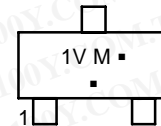
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

- FR–5 = 1.0 x 0.75 x 0.062 in.
- Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.



**SOT–23 (TO–236)
CASE 318
STYLE 6**

MARKING DIAGRAM



1V = Device Code
 M = Date Code*
 ■ = Pb-Free Package

(Note: Microdot may be in either location)

*Date Code orientation and/or overbar may vary depending upon manufacturing location.

ORDERING INFORMATION

Device	Package	Shipping†
MMBT6427LT1	SOT–23	3,000 / Tape & Reel
MMBT6427LT1G	SOT–23 (Pb-Free)	3,000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

Preferred devices are recommended choices for future use and best overall value.

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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage (I _C = 10 mA _{dc} , V _{BE} = 0)	V _{(BR)CEO}	40	-	V _{dc}
Collector-Base Breakdown Voltage (I _C = 100 μA _{dc} , I _E = 0)	V _{(BR)CBO}	40	-	V _{dc}
Emitter-Base Breakdown Voltage (I _C = 10 μA _{dc} , I _C = 0)	V _{(BR)EBO}	12	-	V _{dc}
Collector Cutoff Current (V _{CE} = 25 V _{dc} , I _B = 0)	I _{CES}	-	1.0	μA _{dc}
Collector Cutoff Current (V _{CB} = 30 V _{dc} , I _E = 0)	I _{CBO}	-	50	nA _{dc}
Emitter Cutoff Current (V _{EB} = 10 V _{dc} , I _C = 0)	I _{EBO}	-	50	nA _{dc}

ON CHARACTERISTICS

DC Current Gain (I _C = 10 mA _{dc} , V _{CE} = 5.0 V _{dc}) (I _C = 100 mA _{dc} , V _{CE} = 5.0 V _{dc}) (I _C = 500 mA _{dc} , V _{CE} = 5.0 V _{dc})	h _{FE}	10,000 20,000 14,000	100,000 200,000 140,000	-
Collector-Emitter Saturation Voltage (I _C = 50 mA _{dc} , I _B = 0.5 mA _{dc}) (I _C = 500 mA _{dc} , I _B = 0.5 mA _{dc})	V _{CE(sat)} ⁽³⁾	- -	1.2 1.5	V _{dc}
Base-Emitter Saturation Voltage (I _C = 500 mA _{dc} , I _B = 0.5 mA _{dc})	V _{BE(sat)}	-	2.0	V _{dc}
Base-Emitter On Voltage (I _C = 50 mA _{dc} , V _{CE} = 5.0 V _{dc})	V _{BE(on)}	-	1.75	V _{dc}

SMALL-SIGNAL CHARACTERISTICS

Output Capacitance (V _{CB} = 10 V _{dc} , I _E = 0, f = 1.0 MHz)	C _{obo}	-	7.0	pF
Input Capacitance (V _{EB} = 0.5 V _{dc} , I _C = 0, f = 1.0 MHz)	C _{ibo}	-	15	pF
Current Gain - High Frequency (I _C = 10 mA _{dc} , V _{CE} = 5.0 V _{dc} , f = 100 MHz)	h _{fe}	1.3	-	V _{dc}
Noise Figure (I _C = 1.0 mA _{dc} , V _{CE} = 5.0 V _{dc} , R _S = 100 kΩ, f = 1.0 kHz)	NF	-	10	dB

3. Pulse Test: Pulse Width = 300 μs, Duty Cycle = 2.0%.

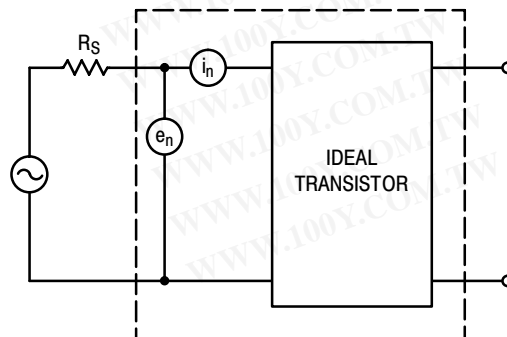


Figure 1. Transistor Noise Model

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NOISE CHARACTERISTICS

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

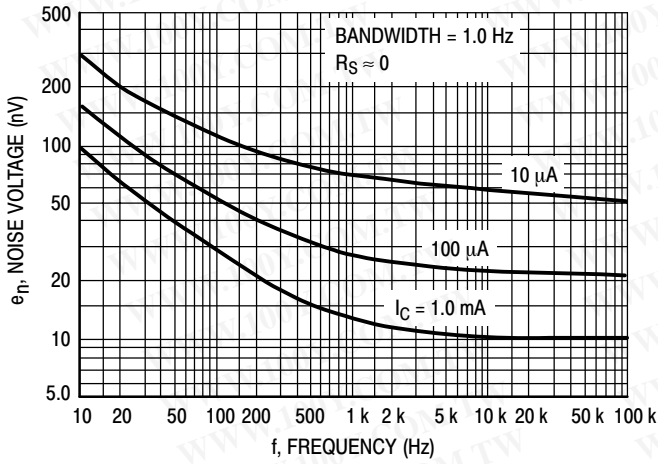


Figure 2. Noise Voltage

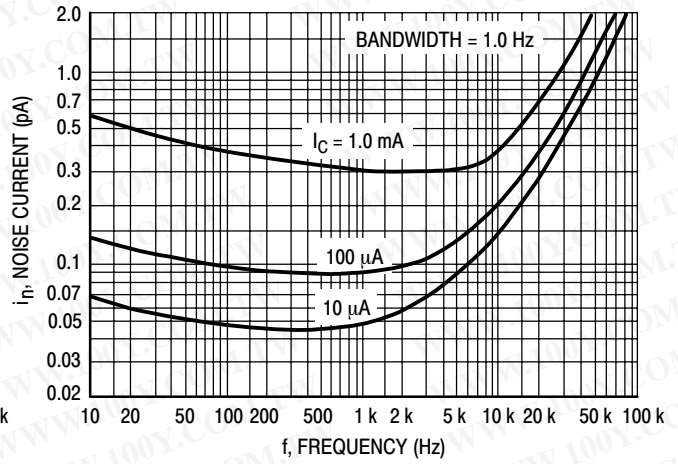


Figure 3. Noise Current

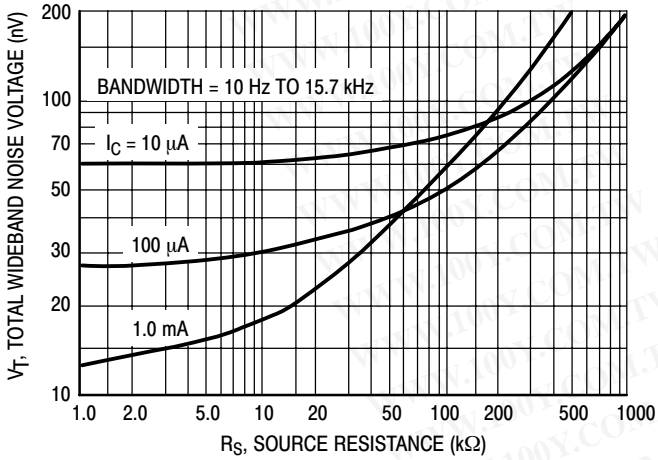


Figure 4. Total Wideband Noise Voltage

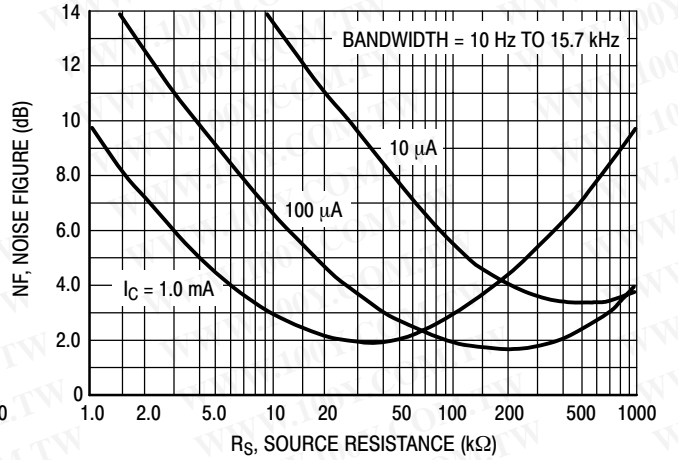


Figure 5. Wideband Noise Figure

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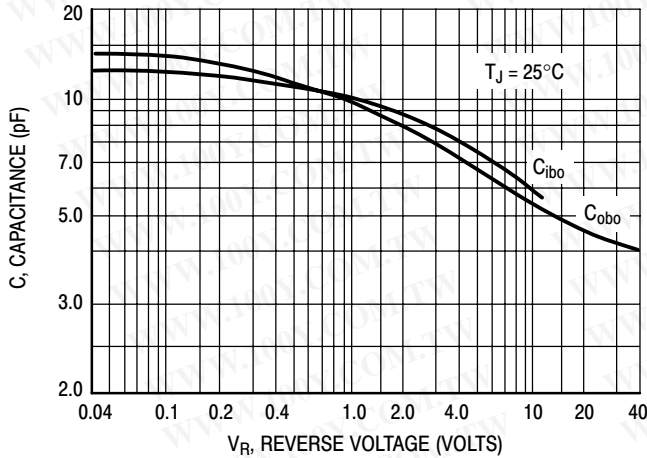


Figure 6. Capacitance

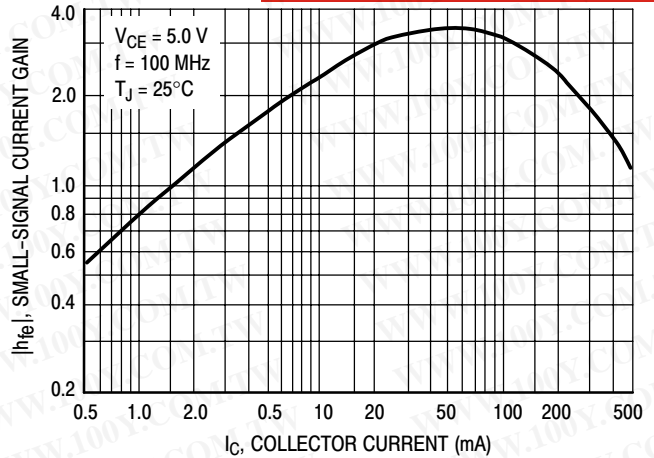


Figure 7. High Frequency Current Gain

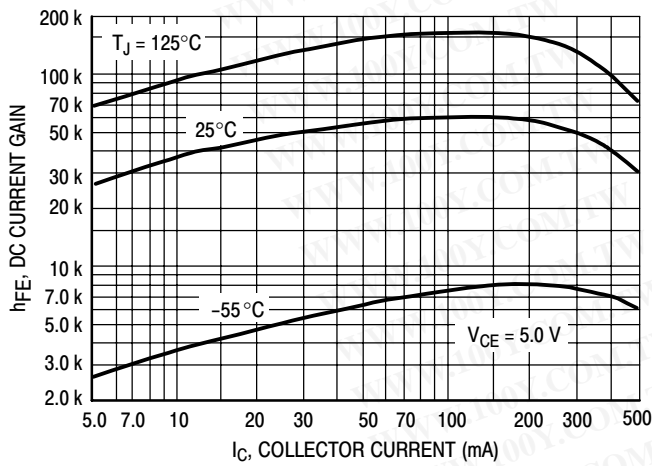


Figure 8. DC Current Gain

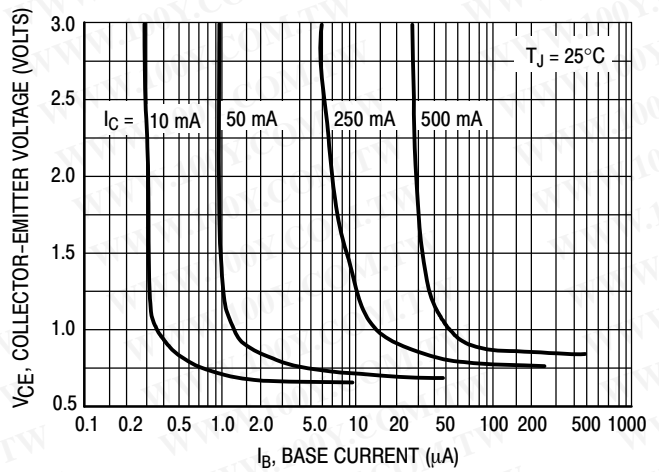


Figure 9. Collector Saturation Region

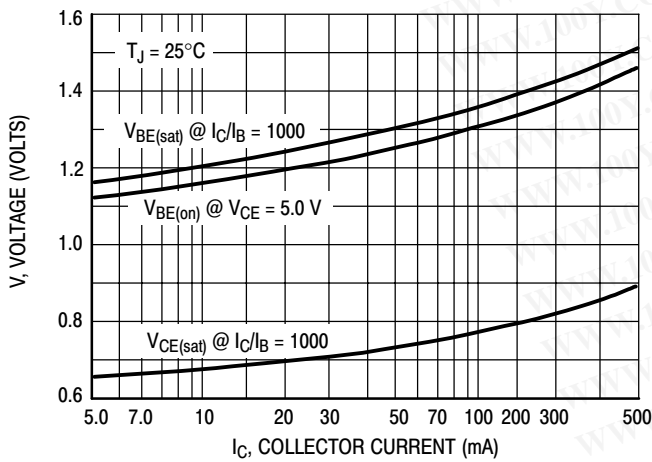


Figure 10. "On" Voltages

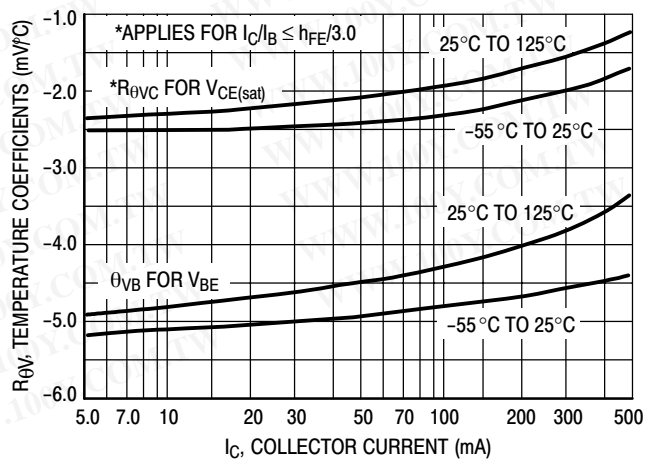


Figure 11. Temperature Coefficients

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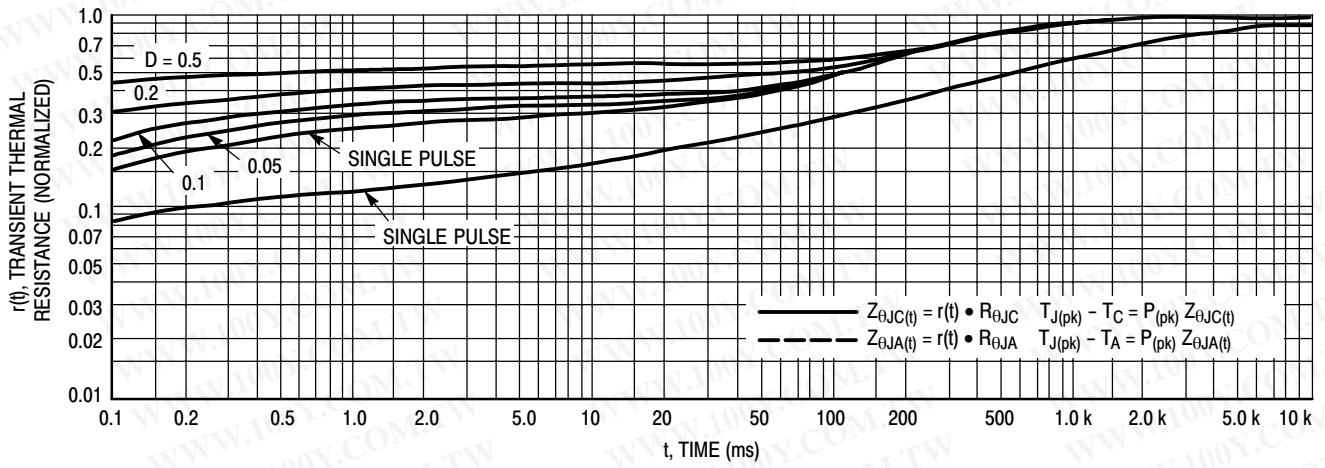
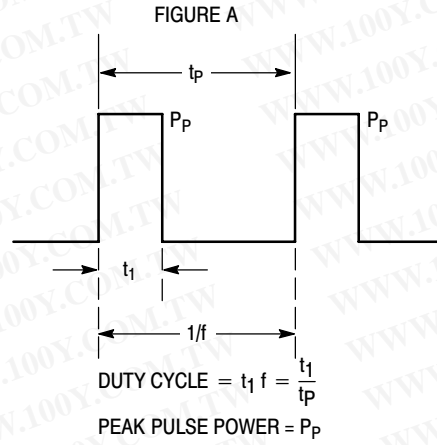


Figure 12. Thermal Response

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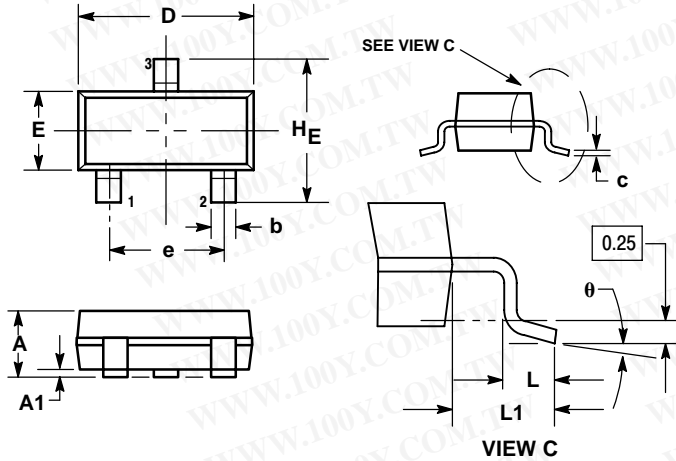
Design Note: Use of Transient Thermal Resistance Data

MMBT6427LT1

PACKAGE DIMENSIONS

SOT-23 (TO-236)
CASE 318-08
ISSUE AN

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NOTES:

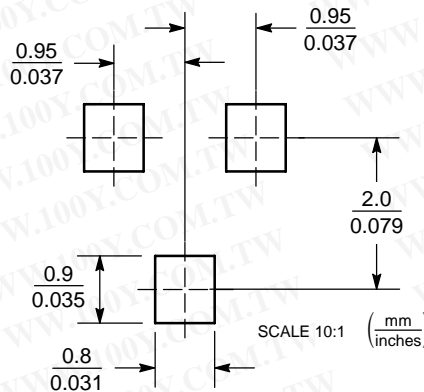
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318-01 THRU -07 AND -09 OBSOLETE, NEW STANDARD 318-08.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1.00	1.11	0.035	0.040	0.044
A1	0.01	0.06	0.10	0.001	0.002	0.004
b	0.37	0.44	0.50	0.015	0.018	0.020
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.081
L	0.10	0.20	0.30	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
HE	2.10	2.40	2.64	0.083	0.094	0.104

STYLE 6:

1. BASE
2. EMITTER
3. COLLECTOR

SOLDERING FOOTPRINT*



*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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