

# MBT6429DW1T1

## Amplifier Transistors

### NPN Silicon

#### Features

- Pb-Free Package is Available

#### MAXIMUM RATINGS

Rating	Symbol	6429DW1T1	Unit
Collector-Emitter Voltage	$V_{CEO}$	45	Vdc
Collector-Base Voltage	$V_{CBO}$	55	Vdc
Emitter-Base Voltage	$V_{EBO}$	6.0	Vdc
Collector Current - Continuous	$I_C$	200	mAdc

#### THERMAL CHARACTERISTICS

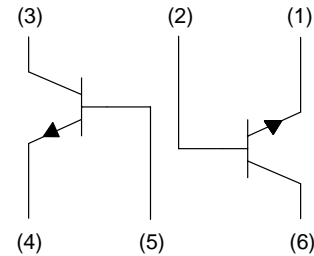
Characteristic	Symbol	Max	Unit
Total Device Dissipation (Note 1) $T_A = 25^\circ\text{C}$	$P_D$	150	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	833	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

- Device mounted on FR4 glass epoxy printed circuit board using the minimum recommended foot print.

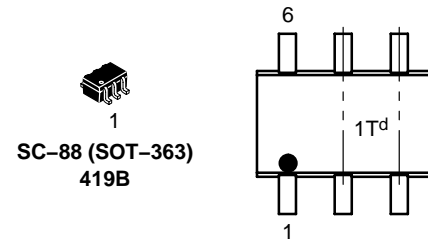


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#### MARKING DIAGRAM



1T = Specific Device Code  
d = Date Code

#### ORDERING INFORMATION

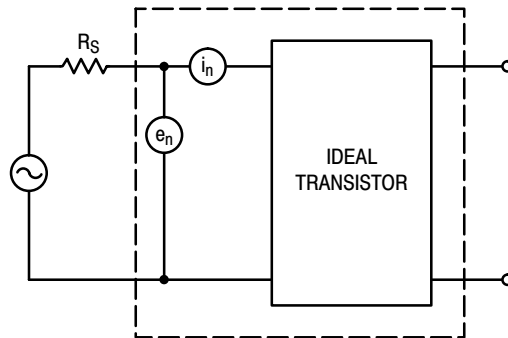
Device	Package	Shipping†
MBT6429DW1T1	SC-88	3000 / Tape & Reel
MBT6429DW1T1G	SC-88 (Pb-Free)	3000 / Tape & Reel

†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.

# MBT6429DW1T1

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

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Collector – Emitter Breakdown Voltage ( $I_C = 1.0 \text{ mAdc}, I_B = 0$ )	$V_{(BR)CEO}$	45	–	Vdc
Collector – Base Breakdown Voltage ( $I_C = 0.1 \text{ mAdc}, I_E = 0$ )	$V_{(BR)CBO}$	55	–	Vdc
Collector Cutoff Current ( $V_{CE} = 30 \text{ Vdc}$ )	$I_{CES}$	–	0.1	$\mu\text{Adc}$
Collector Cutoff Current ( $V_{CB} = 30 \text{ Vdc}, I_E = 0$ )	$I_{CBO}$	–	0.01	$\mu\text{Adc}$
Emitter Cutoff Current ( $V_{EB} = 5.0 \text{ Vdc}, I_C = 0$ )	$I_{EBO}$	–	0.01	$\mu\text{Adc}$
<b>ON CHARACTERISTICS</b>				
DC Current Gain ( $I_C = 0.01 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$ ) ( $I_C = 0.1 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$ ) ( $I_C = 1.0 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$ ) ( $I_C = 10 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$ )	$h_{FE}$	500 500 500 500	– 1250 – –	–
Collector – Emitter Saturation Voltage ( $I_C = 10 \text{ mAdc}, I_B = 0.5 \text{ mAdc}$ ) ( $I_C = 100 \text{ mAdc}, I_B = 5.0 \text{ mAdc}$ )	$V_{CE(sat)}$	– –	0.2 0.6	Vdc
Base – Emitter On Voltage ( $I_C = 1.0 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$ )	$V_{BE(on)}$	0.56	0.66	Vdc
<b>SMALL-SIGNAL CHARACTERISTICS</b>				
Current – Gain – Bandwidth Product ( $I_C = 1.0 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}, f = 100 \text{ MHz}$ )	$f_T$	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**

# MBT6429DW1T1

## NOISE CHARACTERISTICS

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

### NOISE VOLTAGE

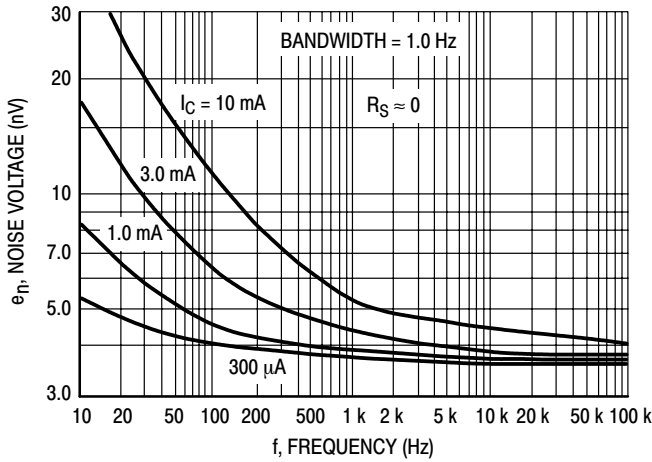


Figure 2. Effects of Frequency

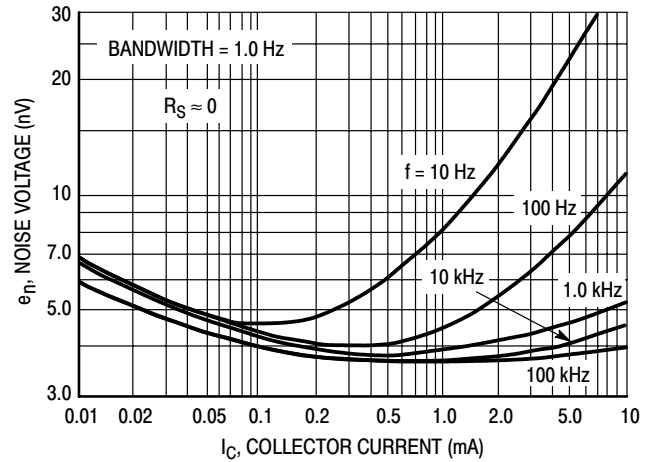


Figure 3. Effects of Collector Current

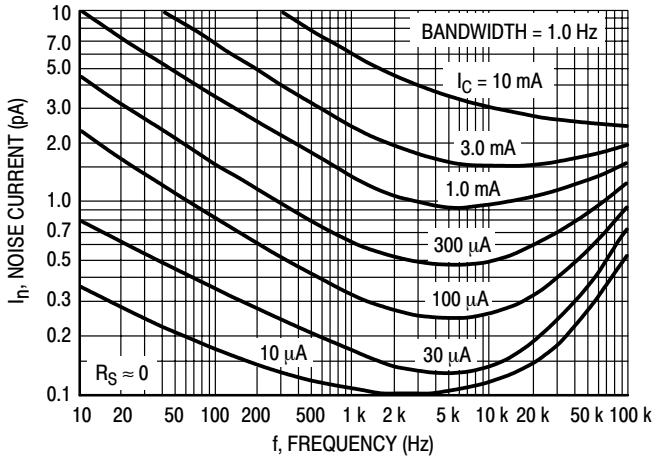


Figure 4. Noise Current

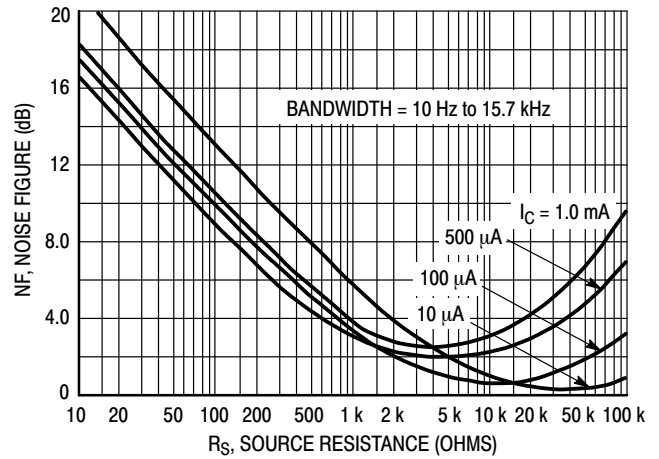


Figure 5. Wideband Noise Figure

### 100 Hz NOISE DATA

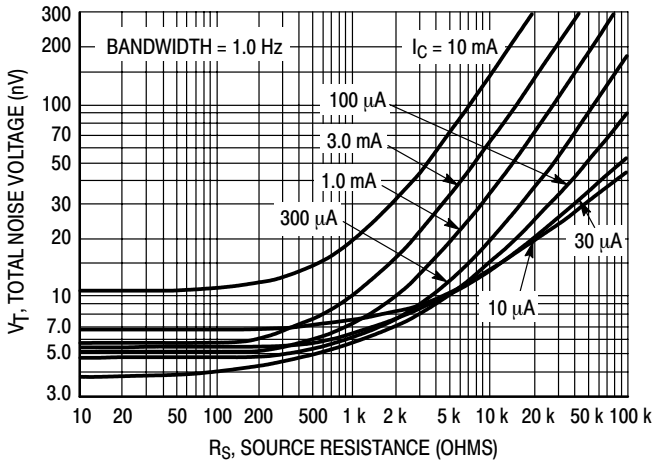


Figure 6. Total Noise Voltage

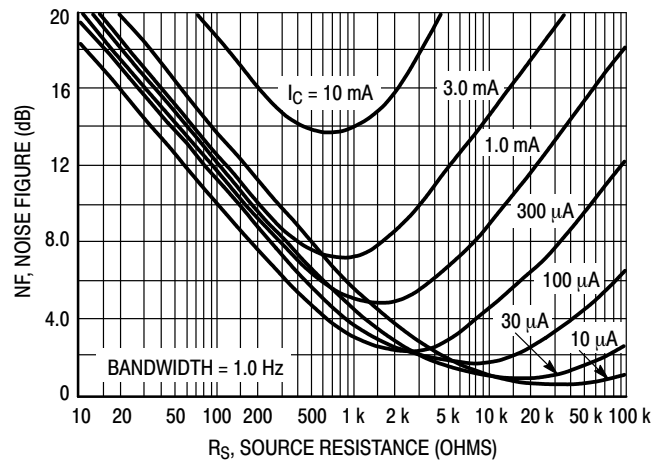


Figure 7. Noise Figure

# MBT6429DW1T1

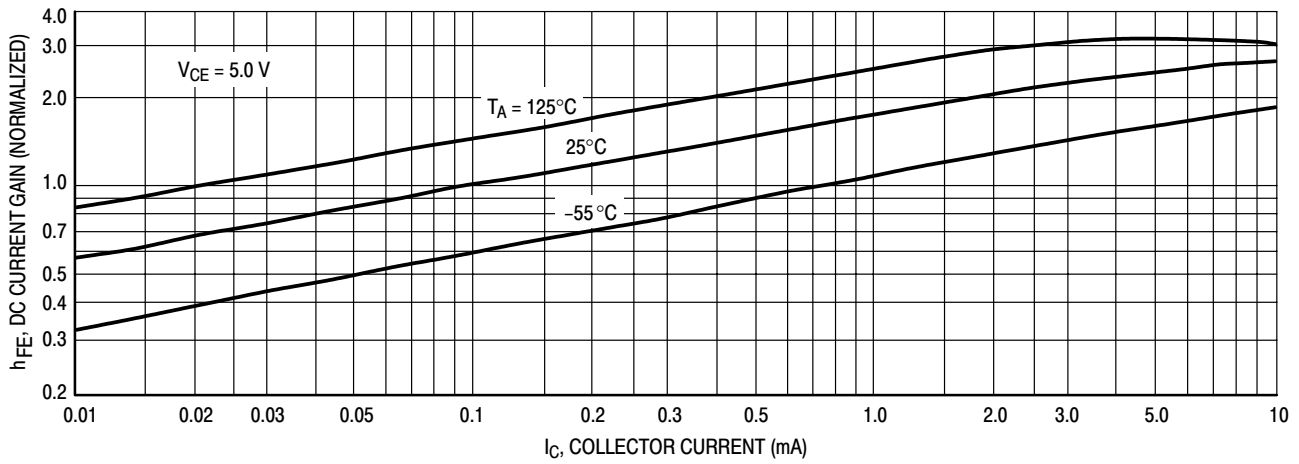


Figure 8. DC Current Gain

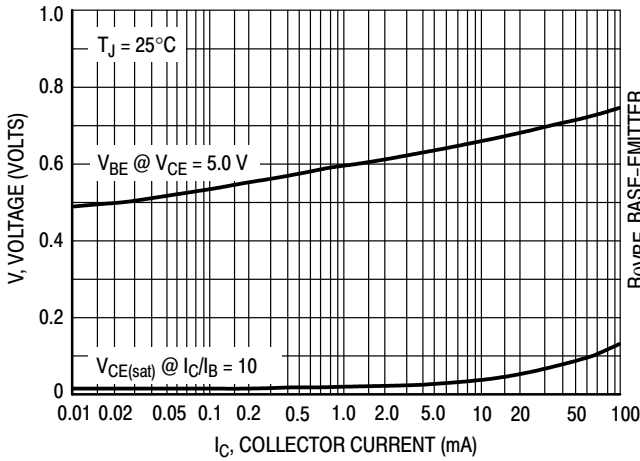


Figure 9. "On" Voltages

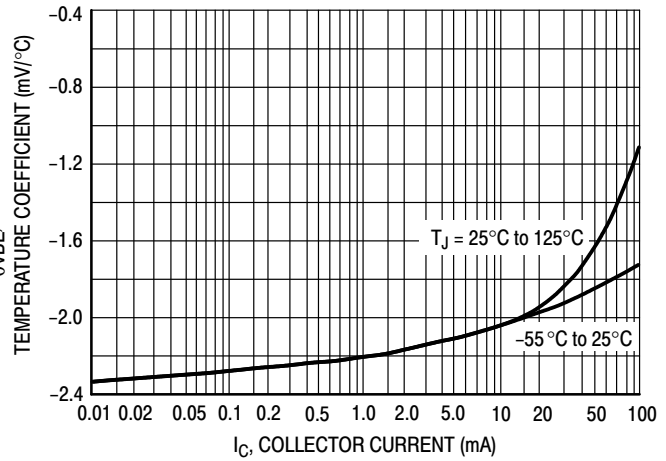


Figure 10. Temperature Coefficients

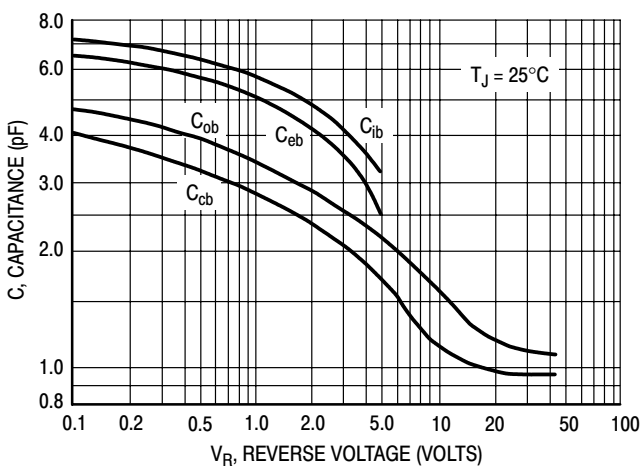


Figure 11. Capacitance

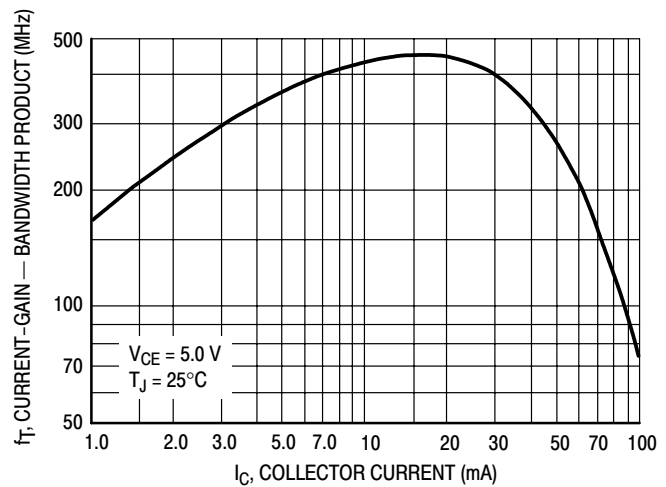


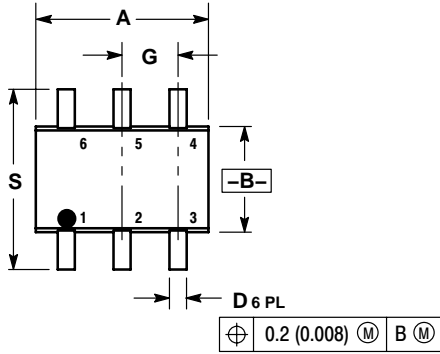
Figure 12. Current-Gain - Bandwidth Product

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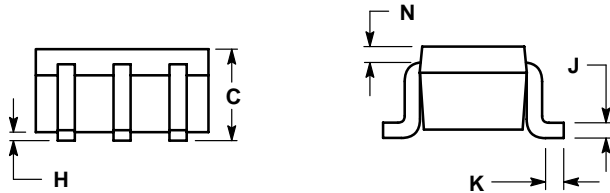
## PACKAGE DIMENSIONS

SC-88/SC70-6/SOT-363  
CASE 419B-02  
ISSUE 02U

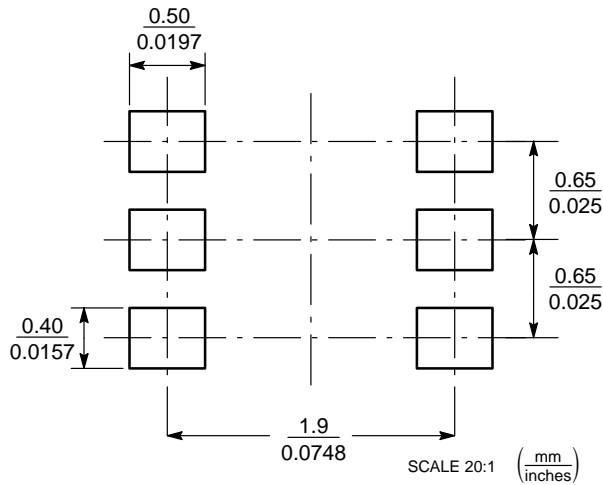
- NOTES:  
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
2. CONTROLLING DIMENSION: INCH.  
3. 419B-01 OBSOLETE, NEW STANDARD 419B-02.



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.071	0.087	1.80	2.20
B	0.045	0.053	1.15	1.35
C	0.031	0.043	0.80	1.10
D	0.004	0.012	0.10	0.30
G	0.026 BSC		0.65 BSC	
H	---	0.004	---	0.10
J	0.004	0.010	0.10	0.25
K	0.004	0.012	0.10	0.30
N	0.008 REF		0.20 REF	
S	0.079	0.087	2.00	2.20



### SOLDERING FOOTPRINT\*



### SC-88/SC70-6/SOT-363

\*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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