

## PNP SILICON LOW POWER TRANSISTOR

Qualified per MIL-PRF-19500/354

### Devices

2N2604

2N2605

### Qualified Level

JAN, JANTX  
JANTXV

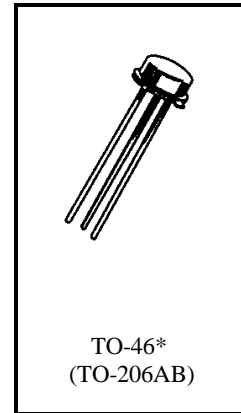
### MAXIMUM RATINGS

Ratings	Symbol	2N2604	2N2605	Units
Collector-Base Voltage	$V_{CBO}$	80	70	Vdc
Collector-Emitter Voltage	$V_{CEO}$	60		Vdc
Emitter-Base Voltage	$V_{EBO}$	6.0		Vdc
Collector Current	$I_C$	30		mAdc
Total Power Dissipation @ $T_A = +25^{\circ}\text{C}^{(1)}$	$P_T$	400		mW/ $^{\circ}\text{C}$
Operating & Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +200		$^{\circ}\text{C}$

### THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.437	$^{\circ}\text{C}/\text{mW}$

1) Derate linearly 2.28 mW/ $^{\circ}\text{C}$  above  $T_A = +25^{\circ}\text{C}$



\*See appendix A for package outline

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

Characteristics	Symbol	Min.	Max.	Unit
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### OFF CHARACTERISTICS

Collector-Base Breakdown Voltage $I_C = 10 \mu\text{Adc}$	2N2604 2N2605	$V_{(BR)CBO}$	80 70	Vdc
Collector-Emitter Breakdown Voltage $I_C = 10 \text{mAdc}$		$V_{(BR)CEO}$	60	Vdc
Emitter-Base Breakdown Current $I_E = 10 \mu\text{Adc}$		$V_{(BR)EBO}$	6.0	Vdc
Collector-Base Cutoff Current $V_{CB} = 50 \text{Vdc}$		$I_{CBO}$	10	$\eta\text{Adc}$
Emitter-Base Cutoff Current $V_{EB} = 5.0 \text{Vdc}$		$I_{EBO}$	2.0	$\eta\text{Adc}$
Collector-Emitter Cutoff Current $V_{CE} = 50 \text{Vdc}$		$I_{CES}$	10	$\eta\text{Adc}$

**2N2604, 2N2605 JAN SERIES**

**ELECTRICAL CHARACTERISTICS (con't)**

Characteristics	Symbol	Min.	Max.	Unit
<b>ON CHARACTERISTICS (2)</b>				
Forward-Current Transfer Ratio $I_C = 10 \mu\text{A}_{dc}, V_{CE} = 5.0 \text{ V}_{dc}$ 2N2604 2N2605	$h_{FE}$	40	120	
$I_C = 500 \mu\text{A}_{dc}, V_{CE} = 5.0 \text{ V}_{dc}$ 2N2604 2N2605		100	300	
$I_C = 10 \text{ mA}_{dc}, V_{CE} = 5.0 \text{ V}_{dc}$ 2N2604 2N2605		60	180	
		150	450	
Collector-Emitter Saturation Voltage $I_C = 10 \text{ mA}_{dc}, I_B = 500 \mu\text{A}_{dc}$	$V_{CE(sat)}$		0.3	Vdc
Base-Emitter Saturation Voltage $I_C = 10 \text{ mA}_{dc}, I_B = 500 \mu\text{A}_{dc}$	$V_{BE(sat)}$	0.7	0.9	Vdc

**DYNAMIC CHARACTERISTICS**

Small-Signal Short-Circuit Input Impedance $I_C = 1.0 \text{ mA}_{dc}, V_{CB} = 5.0 \text{ V}_{dc}, f = 1.0 \text{ kHz}$ 2N2604 2N2605	$h_{ie}$	1.0 2.0	10 20	$k\Omega$
Small-Signal Open-Circuit Output Admittance $I_C = 1.0 \text{ mA}_{dc}, V_{CE} = 5.0 \text{ V}_{dc}, f = 1.0 \text{ kHz}$ 2N2604 2N2605	$h_{oe}$		40 60	$\mu\text{mhos}$
Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 1.0 \text{ mA}_{dc}, V_{CE} = 5.0 \text{ V}_{dc}, f = 1.0 \text{ kHz}$ 2N2604 2N2605	$h_{fe}$	60 150	180 450	
Magnitude of Small-Signal Forward Current Transfer Ratio $I_C = 0.5 \text{ mA}_{dc}, V_{CE} = 5.0 \text{ V}_{dc}, f = 30 \text{ MHz}$	$ h_{fe} $	1.0	8.0	
Output Capacitance $V_{CB} = 5.0 \text{ V}_{dc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	$C_{obo}$		6.0	pF
Noise Figure $V_{CE} = 5.0 \text{ V}_{dc}, I_C = 10 \mu\text{A}_{dc}, R_g = 10 k\Omega, f = 100 \text{ Hz}$ $V_{CE} = 5.0 \text{ V}_{dc}, I_C = 10 \mu\text{A}_{dc}, R_g = 10 k\Omega, f = 1.0 \text{ kHz}$ $V_{CE} = 5.0 \text{ V}_{dc}, I_C = 10 \mu\text{A}_{dc}, R_g = 10 k\Omega, f = 10 \text{ kHz}$	$F_1$ $F_2$ $F_3$		5.0 3.0 3.0	dB

(2) Pulse Test: Pulse Width = 300 $\mu\text{s}$ , Duty Cycle  $\leq$  2.0%.

