

RoHS Compliant Product

FEATURES

Power dissipation

$$P_{CM} : 1 \text{ W (Tamb=25°C)}$$

Collector current

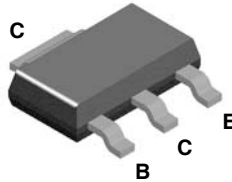
$$I_{CM} : 0.6 \text{ A}$$

Collector-base voltage

$$V_{(BR)CBO} : 75 \text{ V}$$

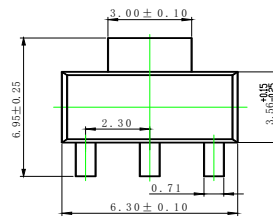
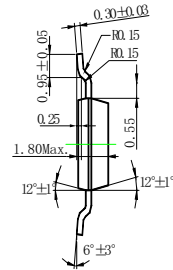
Operating and storage junction temperature range

$$T_J, T_{stg} : -55^\circ\text{C to } +150^\circ\text{C}$$



SOT-223

1. BASE
2. COLLECTOR
3. EMITTER



1 2 3 Unit : mm

ELECTRICAL CHARACTERISTICS (Tamb=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = 10 \mu\text{A}, I_E = 0$	75		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}, I_B = 0$	40		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = 10 \mu\text{A}, I_C = 0$	6		V
Collector cut-off current	I_{CBO}	$V_{CB} = 60\text{V}, I_E = 0$		0.01	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 3\text{V}, I_C = 0$		0.01	μA
DC current gain	$h_{FE(1)}$	$V_{CE} = 10\text{V}, I_C = 0.1\text{mA}$	35		
	$h_{FE(2)}$	$V_{CE} = 10\text{V}, I_C = 1\text{mA}$	50		
	$h_{FE(3)}$	$V_{CE} = 10\text{V}, I_C = 10\text{mA}$	75		
	$h_{FE(4)}$	$V_{CE} = 10\text{V}, I_C = 150\text{mA}$	100	300	
	$h_{FE(5)}$	$V_{CE} = 1\text{V}, I_C = 150\text{mA}$	50		
	$h_{FE(6)}$	$V_{CE} = 10\text{V}, I_C = 500\text{mA}$	40		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 500 \text{mA}, I_B = 50\text{mA}$		1	V
	$V_{CE(sat)}$	$I_C = 150 \text{mA}, I_B = 15\text{mA}$		0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = 500 \text{mA}, I_B = 50\text{mA}$		2.0	V
	$V_{BE(sat)}$	$I_C = 150 \text{mA}, I_B = 15\text{mA}$	0.6	1.2	V
Transition frequency	f_T	$V_{CE} = 20\text{V}, I_C = 20\text{mA}$ $f = 100\text{MHz}$	300		MHz
Output Capacitance	C_{ob}	$V_{CB} = 10\text{V}, I_E = 0$ $f = 1\text{MHz}$		8	pF
Delay time	t_d	$V_{CC} = 30\text{V}, I_C = 150\text{mA}$		10	nS
Rise time	t_r	$V_{BE(off)} = 0.5\text{V}, I_{B1} = 15\text{mA}$		25	nS
Storage time	t_s	$V_{CC} = 30\text{V}, I_C = 150\text{mA}$		225	nS
Fall time	t_f	$I_{B1} = I_{B2} = 15\text{mA}$		60	nS

● SWITCHING TIME EQUIVALENT TEST CIRCUITS

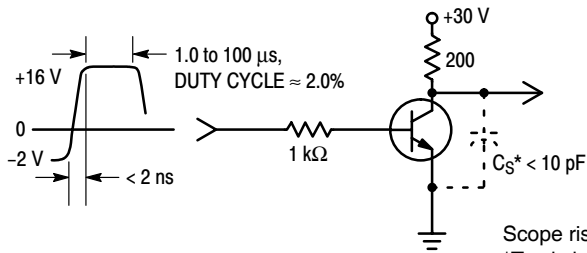


Figure 1. Turn-On Time

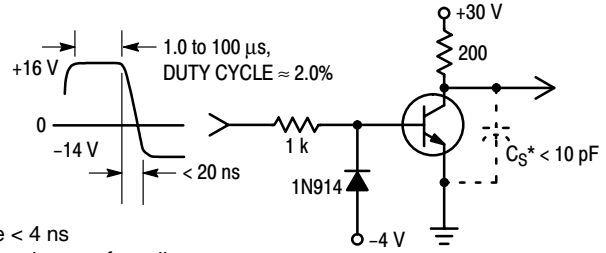


Figure 2. Turn-Off Time

Scope rise time $< 4 \text{ ns}$
*Total shunt capacitance of test jig, connectors, and oscilloscope.

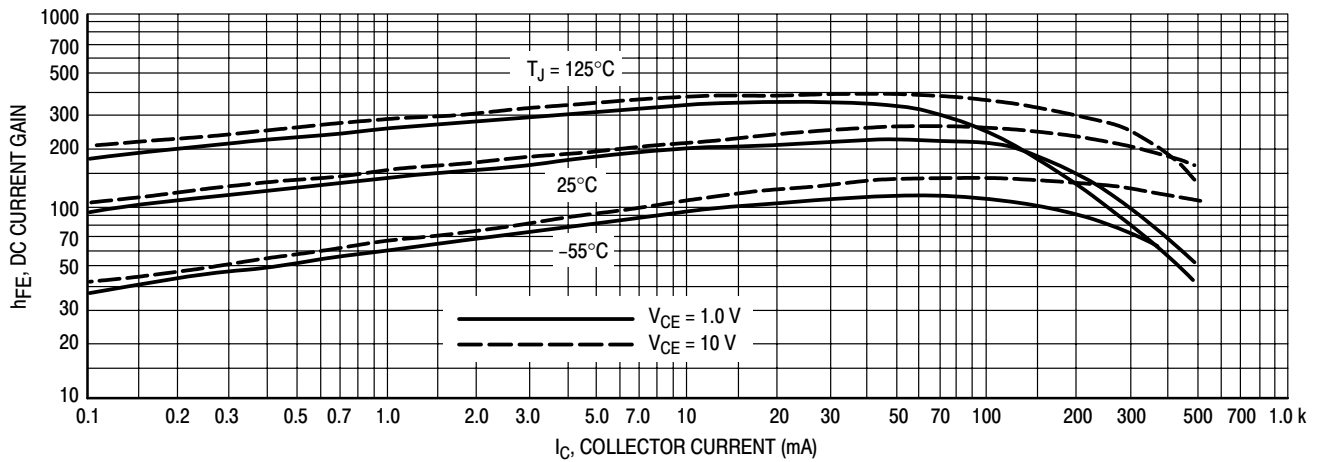


Figure 3. DC Current Gain

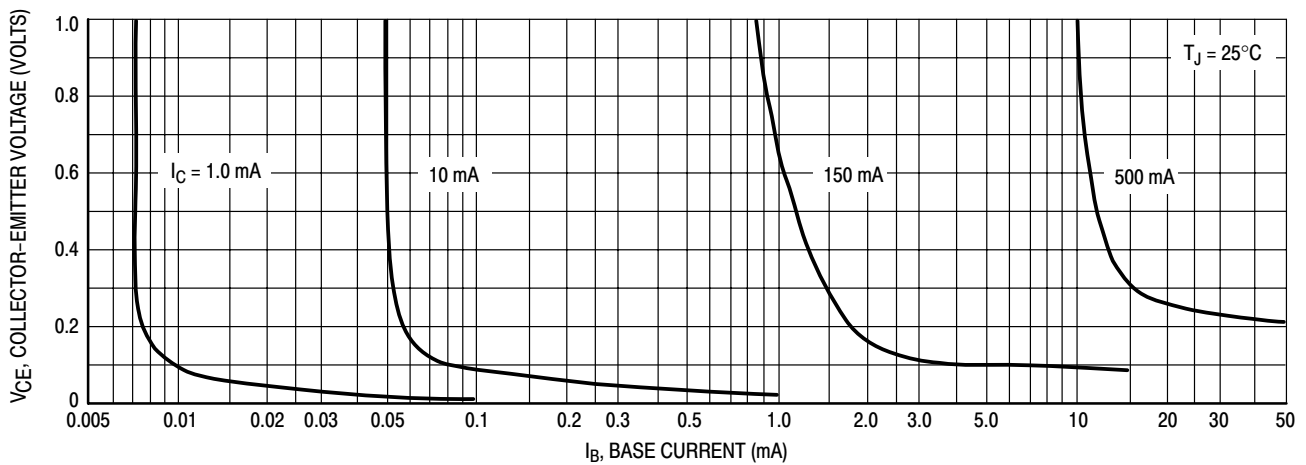


Figure 4. Collector Saturation Region

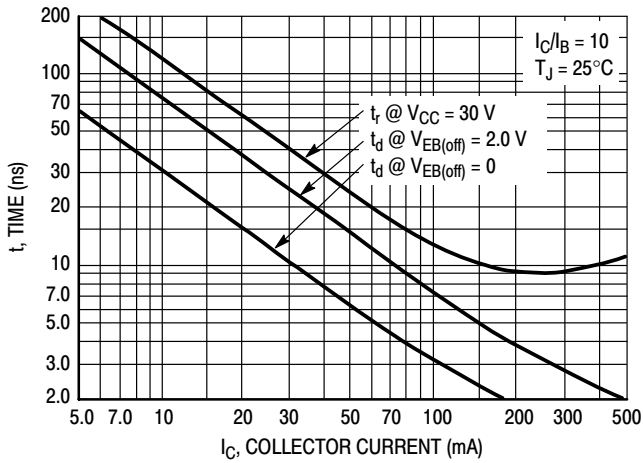


Figure 5. Turn-On Time

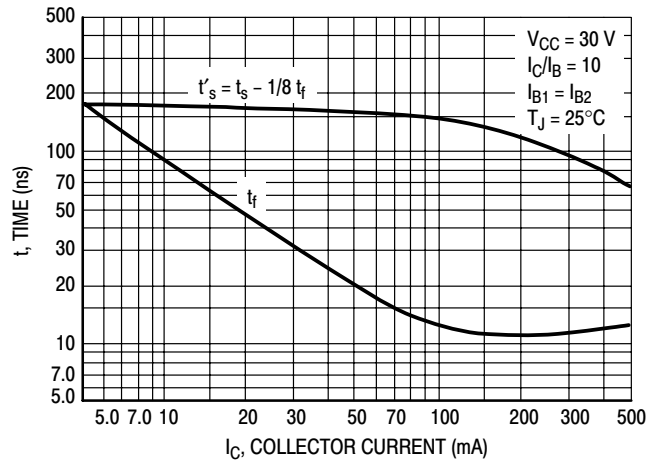


Figure 6. Turn-Off Time

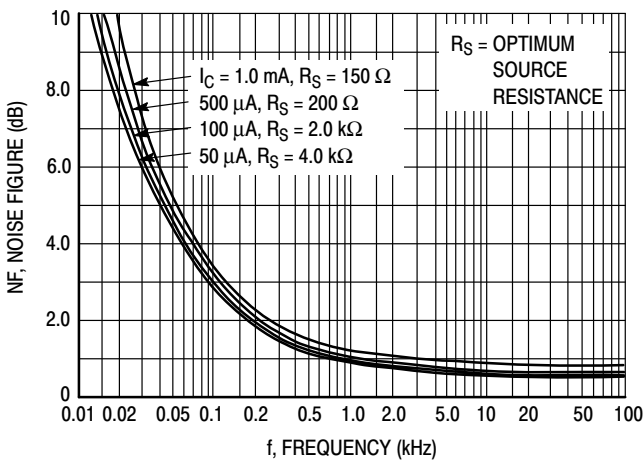


Figure 7. Frequency Effects

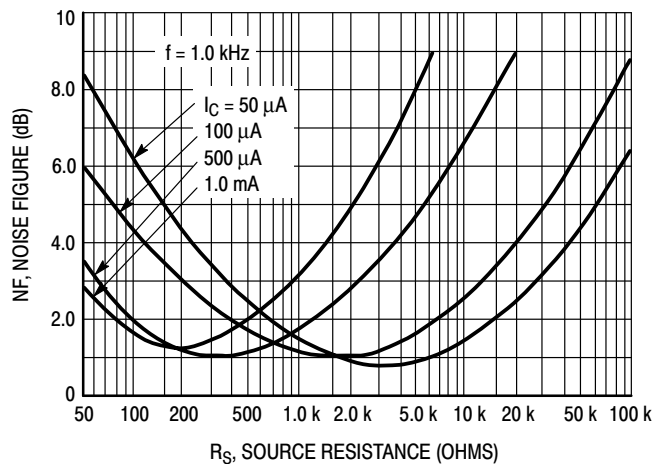


Figure 8. Source Resistance Effects

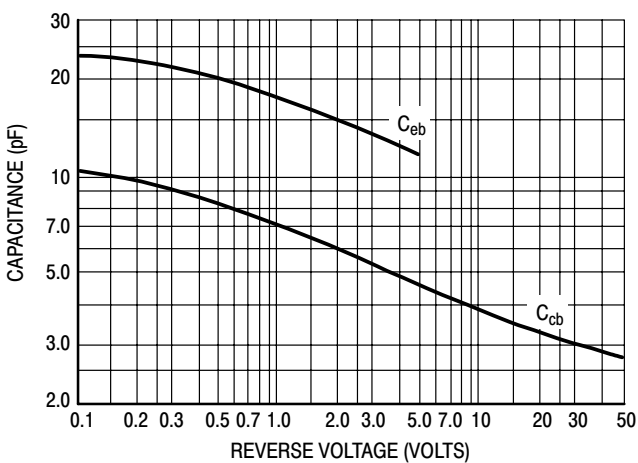


Figure 9. Capacitances

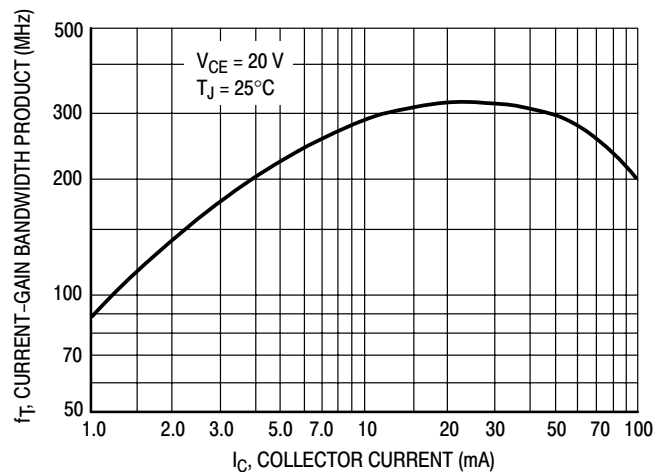


Figure 10. Current-Gain Bandwidth Product

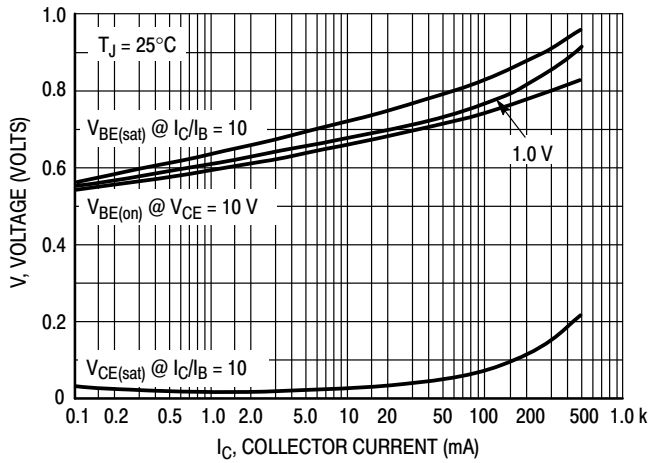


Figure 11. "On" Voltages

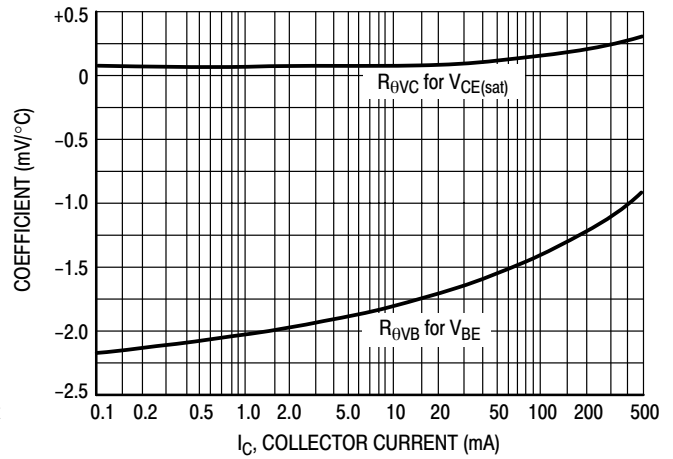


Figure 12. Temperature Coefficients