



GENERAL PURPOSE TRANSISTOR

- * Collector Dissipation: $P_c=225\text{mW}$
- * Collector-Emitter Voltage : $V_{ce0}=40\text{V}$
- *

ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise specified)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{cbo}	60	V
Collector-Emitter Voltage	V_{ceo}	40	V
Emitter-Base Voltage	V_{ebo}	6	V
Collector Current	I_c	200	mA
Collector Dissipation $T_a=25^\circ\text{C}$ *	P_D	225	mW
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55-150	$^\circ\text{C}$

Package:SOT-23



PIN:	1	2	3
STYLE			
NO.1	B	E	C

ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$ unless otherwise specified)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector-Base Breakdown Voltage	BV_{cbo}	60			V	$I_c=10\mu\text{A}$ $I_e=0$
Collector-Emitter Breakdown Voltage#	BV_{ceo}	40			V	$I_c=1\text{mA}$ $I_b=0$
Emitter-Base Breakdown Voltage	BV_{ebo}	6			V	$I_e=10\mu\text{A}$ $I_c=0$
Emitter-Base Cutoff Current	I_{ebo}			100	nA	$V_{eb}=3\text{V}$ $I_e=0$
DC Current Gain	H_{fe1}	100		300		$V_{ce}=1\text{V}$ $I_c=10\text{mA}$
DC Current Gain	H_{fe2}	30				$V_{ce}=1\text{V}$ $I_c=100\text{mA}$
Collector-Emitter Saturation Voltage	$V_{ce(sat)}$			0.2	V	$I_c=10\text{mA}$ $I_b=1\text{mA}$
Collector-Emitter Saturation Voltage	$V_{ce(sat)}$			0.3	V	$I_c=50\text{mA}$ $I_b=5\text{mA}$
Base-Emitter Saturation Voltage	$V_{be(sat)}$			0.85	V	$I_c=10\text{mA}$ $I_b=1\text{mA}$
Base-Emitter Saturation Voltage	$V_{be(sat)}$			0.95	V	$I_c=50\text{mA}$ $I_b=5\text{mA}$
Output Capacitance	C_{obo}			4.0	PF	$V_{ce}=5.0\text{V}$ $I_e=0$ $f=1.0\text{MHz}$
Input Capacitance	C_{ibo}			8.0	PF	$V_{ce}=0.5\text{V}$ $I_e=0$ $f=1.0\text{MHz}$
Current Gain-Bandwidth Product	f_T	300			MHz	$V_{ce}=20\text{V}$ $I_c=10\text{mA}$ $f=100\text{MHz}$
Noise Figure	NF			5.0	dB	$V_{ce}=5\text{Vdc}$ $I_c=100\mu\text{Adc}$ $R_s=1.0\text{K}\Omega$ $F=1.0\text{KHz}$
Delay Time	t_d			35	ns	(VCC = 3.0 Vdc, VEB(off) = - 0.5 Vdc IC =10mAdc, IB1 = 1.0mAdc)
Rise Time	t_r			35	ns	
Storage Time	t_s			200	ns	(VCC = 3.0 Vdc, IC =10 mAdc IB1 = IB2 = 10 mAdc)
Fall Time	t_f			50	ns	

* Total Device Dissipation : FR=1x0.75x0.062in Board , Derate 25°C .

Pulse Test : Pulse Width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$

DEVICE MARKING: 1A

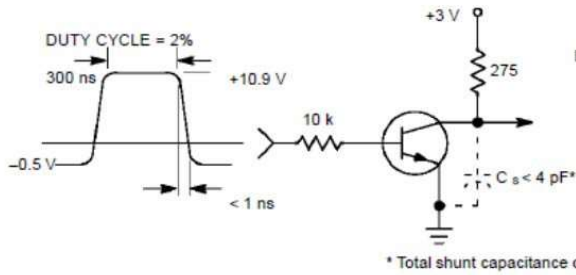
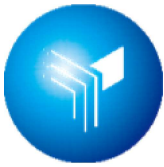


Figure 1. Delay and Rise Time
Equivalent Test Circuit

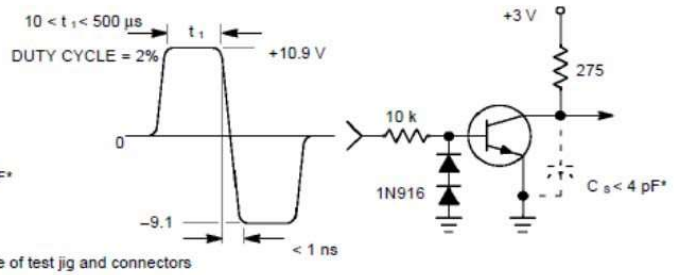


Figure 2. Storage and Fall Time
Equivalent Test Circuit

TYPICAL TRANSIENT CHARACTERISTICS

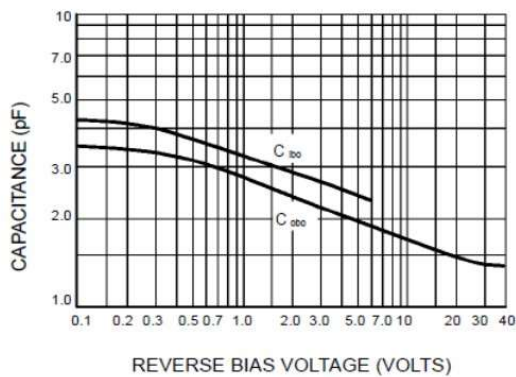


Figure 3. Capacitance

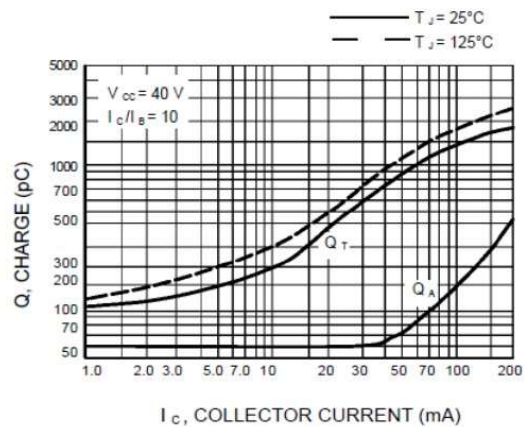


Figure 4. Charge Data

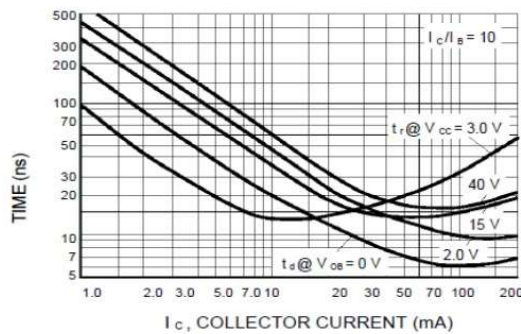


Figure 5. Turn-On Time

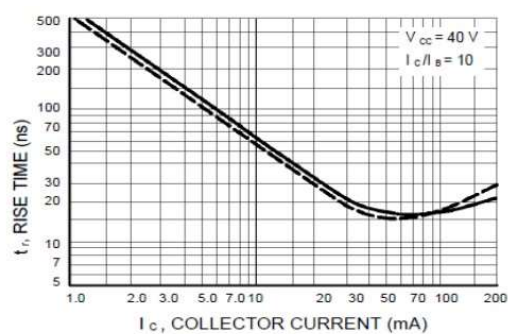


Figure 6. Rise Time

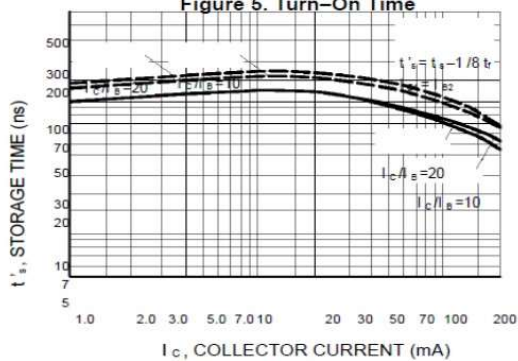


Figure 7. Storage Time

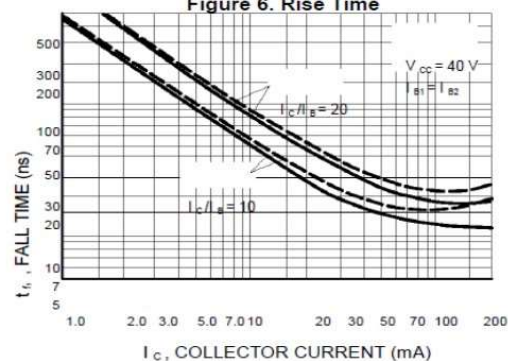


Figure 8. Fall Time



TYPICAL AUDIO SMALL-SIGNAL CHARACTERISTICS
NOISE FIGURE VARIATIONS

($V_{CE} = 5.0$ Vdc, $T_A = 25^\circ\text{C}$, Bandwidth = 1.0 Hz)

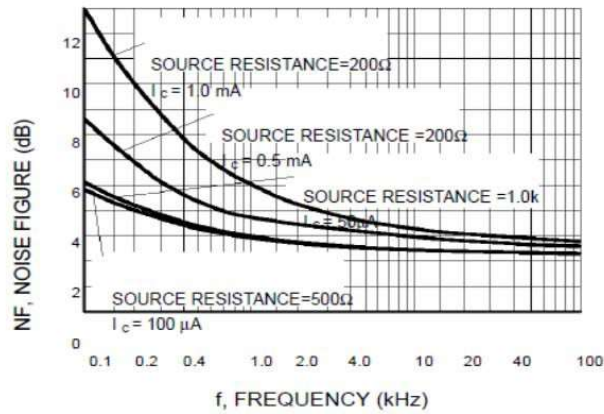


Figure 9.

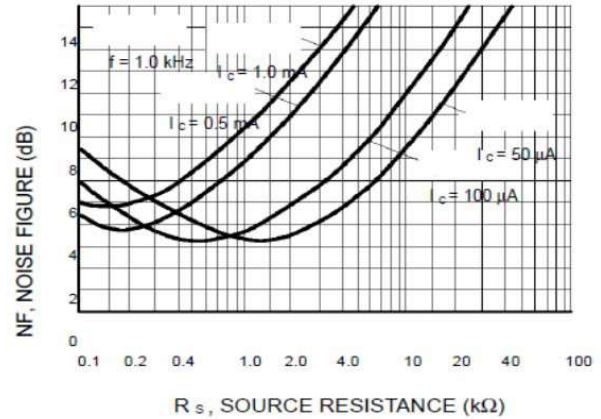


Figure 10.

h PARAMETERS

($V_{CE} = 10$ Vdc, $f = 1.0$ kHz, $T_A = 25^\circ\text{C}$)

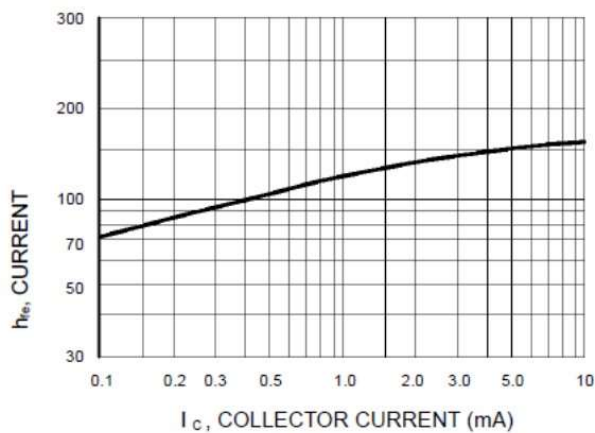


Figure 11. Current Gain

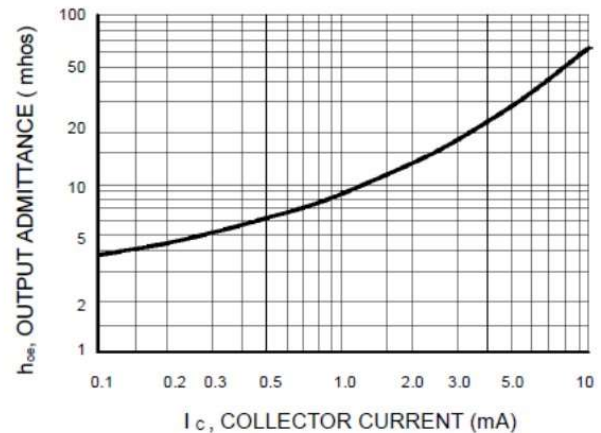


Figure 12. Output Admittance

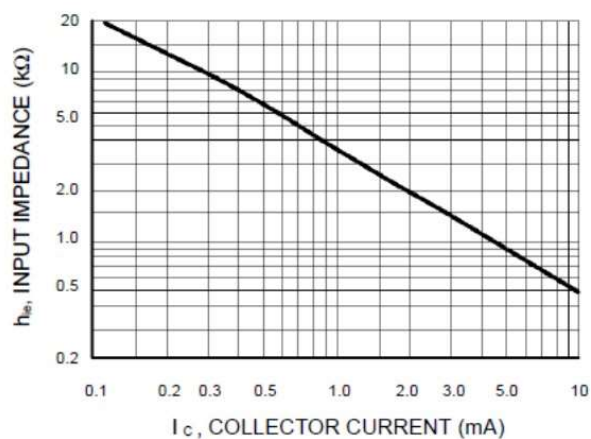


Figure 13. Input Impedance

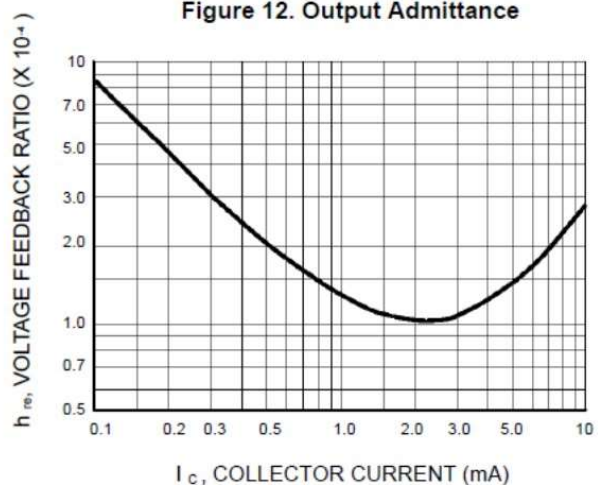
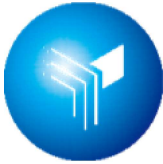
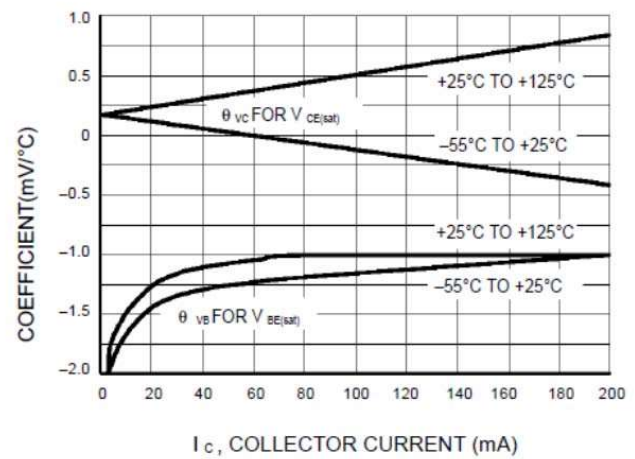
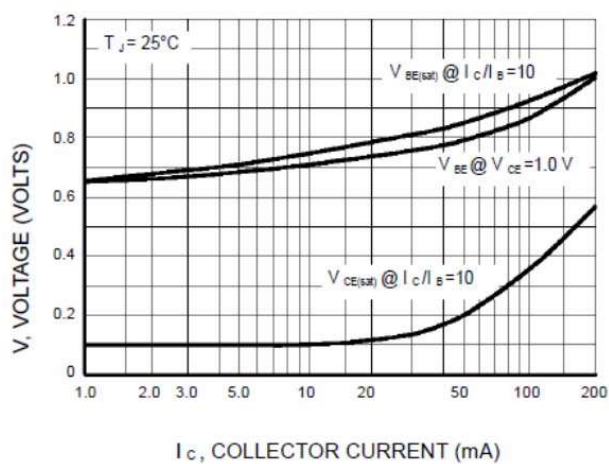
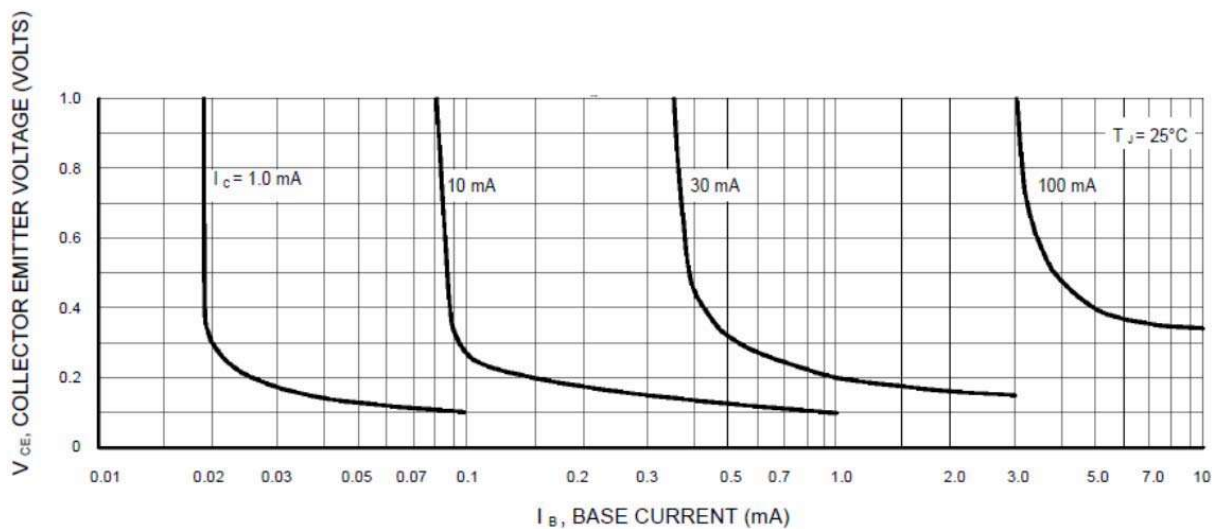
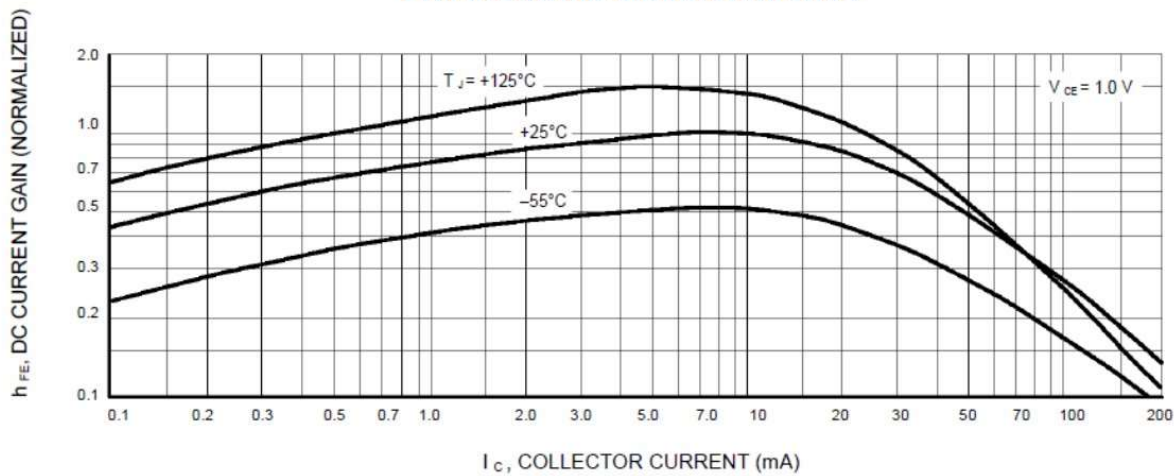
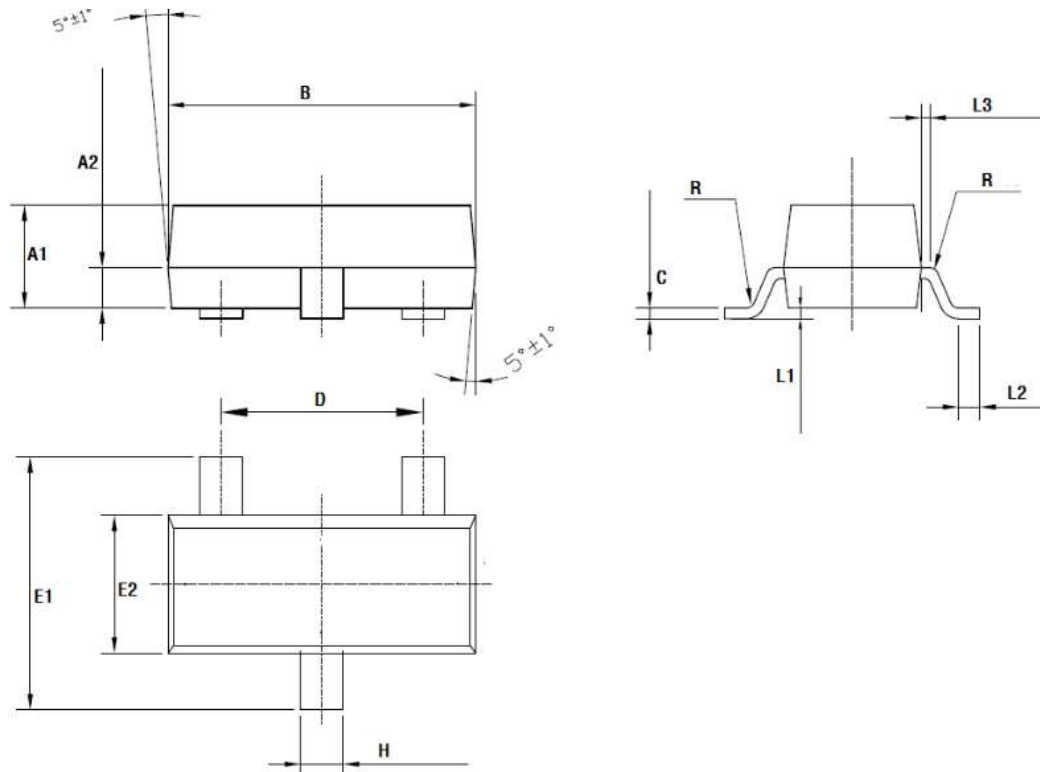


Figure 14. Voltage Feedback Ratio



TYPICAL STATIC CHARACTERISTICS





Symbol	Dimensions in Millimeters			内部结构 STYLS	管脚 PIN		
	Min	Nominal	Max		1 脚	2 脚	3 脚
A1	0.900	0.950	1.000	6	基极 BASE	发射极 EMITTER	集电极 COLLCTOR
A2	0.350	0.380	0.410				
B	2.800	2.900	3.000	8	阳极 ANODE	不连接 NO- CONNECTION	阴极 CATHODE
C	0.080	0.100	0.150				
D	1.800	1.900	2.000	9	阳极 ANODE	阳极 ANODE	阴极 CATHODE
E1	2.200	2.400	2.600				
E2	1.200	1.300	1.400	11	阳极 ANODE	阴极 CATHODE	阳极-阴极 ANODE-CATHODE
H	0.300	0.400	0.500				
L1	0.000		0.100	12	阴极 CATHODE	阴极 CATHODE	阳极 ANODE
L2	0.200						
L3	0.030	0.080	0.130	18	不连接 NO- CONNECTION	阴极 CATHODE	阳极 ANODE
R	0.080TYP						
				19	阴极 CATHODE	阳极 ANODE	阴极-阳极 CATHODE-ANODE