优尚

YOUSHANG SEMICONDUCTOR

设计研发新型功率器件

各类小信号开关

中低压及高压大电流等场效应管

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企业微信二维码

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Features

- BV_{CEO} > -60V
- Epitaxial Planar Die Construction
- Ideally Suited for Automated Assembly Processes•

Complementary NPN Type: DIODES™ NK-DZT2222A

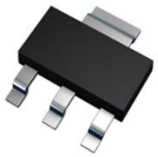
Mechanical Data

- Package: SOT223
- Package Material: Molded Plastic. “Green” Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.112 grams (Approximate)

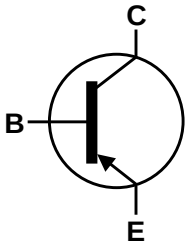
Applications

- Medium power amplification and switching

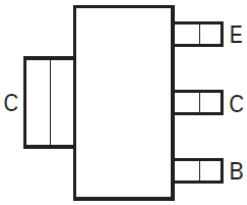
SOT223



Top View



Device Symbol



Top View
Pin-Out

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-60	V
Collector-Emitter Voltage	V_{CEO}	-60	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Continuous Current	I_C	-600	mA
Peak Collector Current	I_{CM}	-800	mA

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	0.83	W
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	150	°C/W
Power Derating Factor above +25°C (Note 5)	P_{DER}	6.66	mW/°C
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Note: 5. For a device mounted on minimum recommended pad (MRP) layout that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.

Thermal Characteristics and Derating Information

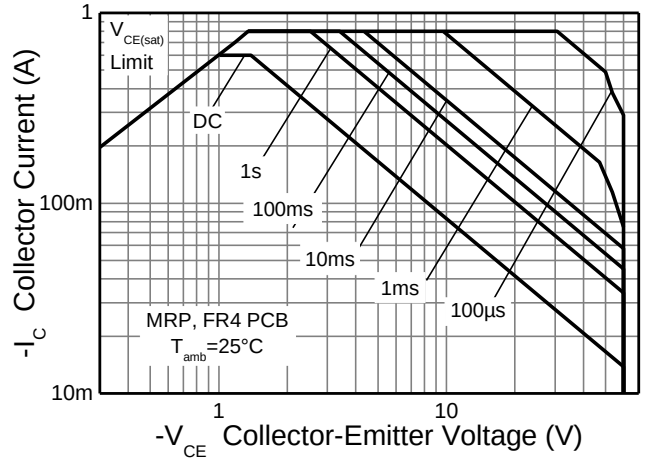


Figure 1. Safe Operating Area

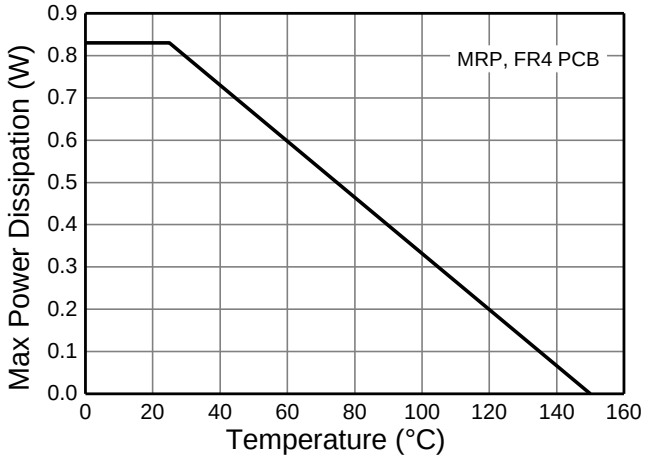


Figure 2. Derating Curve

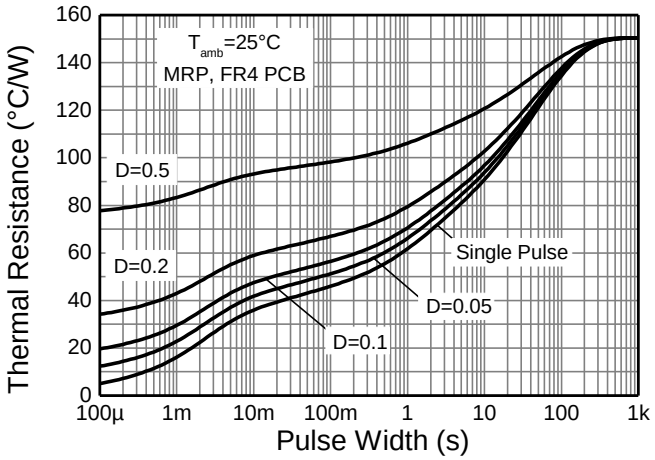


Figure 3. Transient Thermal Impedance

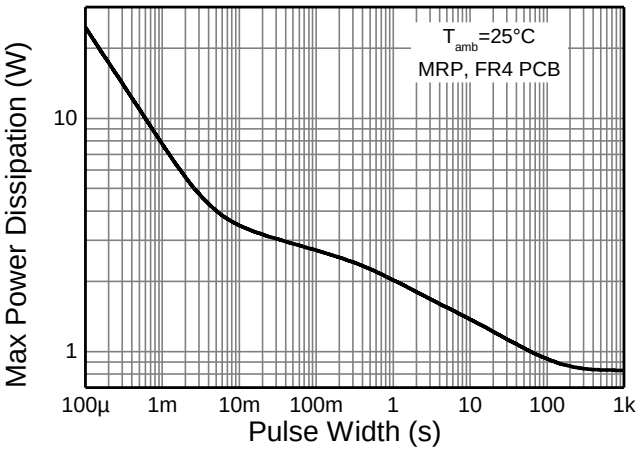


Figure 4. Pulse Power Dissipation

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
OFF CHARACTERISTICS (Note 6)						
Collector-Base Breakdown Voltage	BV_{CBO}	-60	—	—	V	I_C = -10μA
Collector-Emitter Breakdown Voltage	BV_{CEO}	-60	—	—	V	I_C = -10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	I_E = -10μA
Collector-Base Cutoff Current	I_{CBO}	—	—	-0.01	μA	V_{CB} = -50V
		—	—	-10		V_{CB} = -50V, T_A = +150°C
Collector Cutoff Current	I_{CEX}	—	—	-50	nA	V_{CE} = -30V, $V_{EB(off)}$ = -0.5V
Base Cutoff Current	I_{BL}	—	—	-50	nA	V_{CE} = -30V, $V_{EB(off)}$ = -0.5V
ON CHARACTERISTICS (Note 6)						
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	-0.4	V	I_C = -150mA, I_B = -15mA
		—	—	-1.6	V	I_C = -500mA, I_B = -50mA
DC Current Gain	h_{FE}	75	—	—	—	V_{CE} = -10V, I_C = -100μA
		100	—	—	—	V_{CE} = -10V, I_C = -1mA
		100	—	—	—	V_{CE} = -10V, I_C = -10mA
		100	—	300	—	V_{CE} = -10V, I_C = -150mA
		50	—	—	—	V_{CE} = -10V, I_C = -500mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	-1.3	V	I_C = -150mA, I_B = -15mA
		—	—	-2.6	V	I_C = -500mA, I_B = -50mA
SMALL SIGNAL CHARACTERISTICS						
Current Gain-Bandwidth Product	f_T	200	—	—	MHz	V_{CE} = -20V, I_C = -50mA, f = 100MHz
Output Capacitance	C_{obo}	—	—	8	pF	V_{CB} = -10V, f = 1MHz
Input Capacitance	C_{ibo}	—	—	30	pF	V_{EB} = -2V, f = 1MHz
SWITCHING CHARACTERISTICS						
Turn-On Time	t_{on}	—	—	45	ns	V_{CC} = -30V, I_C = -150mA, I_{B1} = -15mA
Delay Time	t_d	—	—	10	ns	
Rise Time	t_r	—	—	40	ns	
Turn-Off Time	t_{off}	—	—	100	ns	V_{CC} = -6V, I_C = -150mA, I_{B1} = $-I_{B2}$ = -15mA
Storage Time	t_s	—	—	80	ns	
Fall Time	t_f	—	—	30	ns	

Note: 6. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

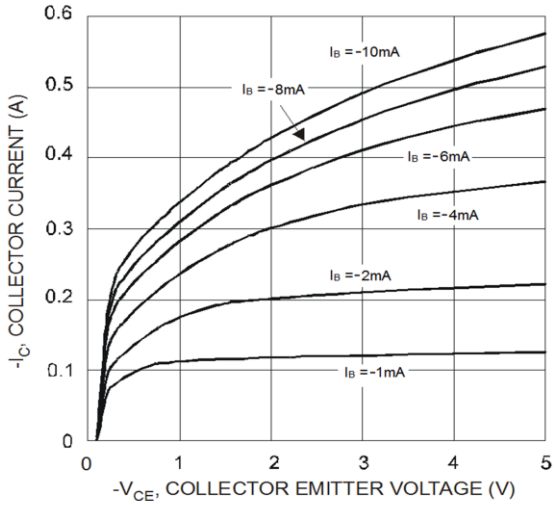


Figure 5. Typical Collector Current as a Function of Collector Emitter Voltage

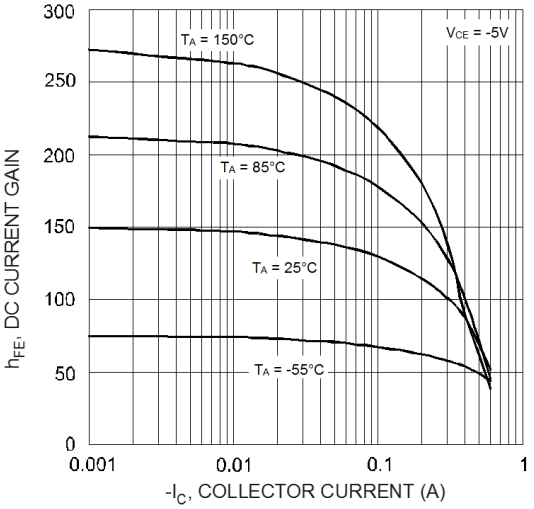


Figure 6. Typical DC Current Gain vs. Collector Current

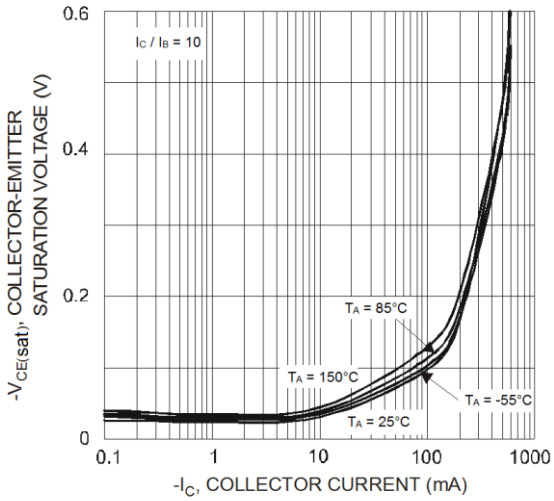


Figure 7. Typical Collector-Emitter Saturation Voltage vs. Collector Current

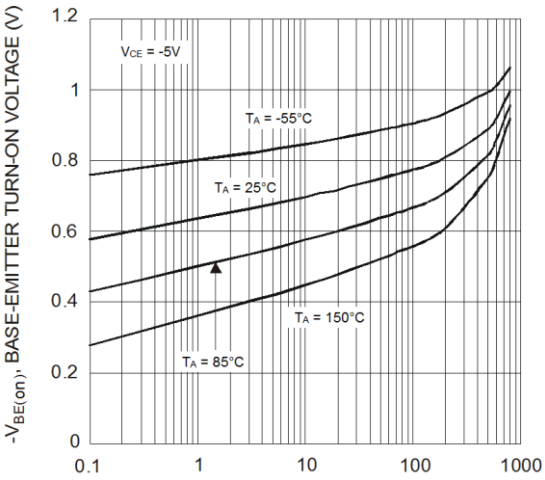


Figure 8. Typical Base-Emitter Turn-On Voltage vs. Collector Current

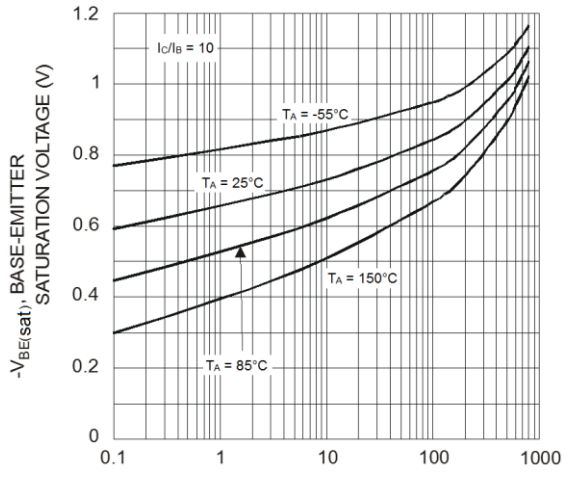


Figure 9. Typical Base-Emitter Saturation Voltage vs. Collector Current

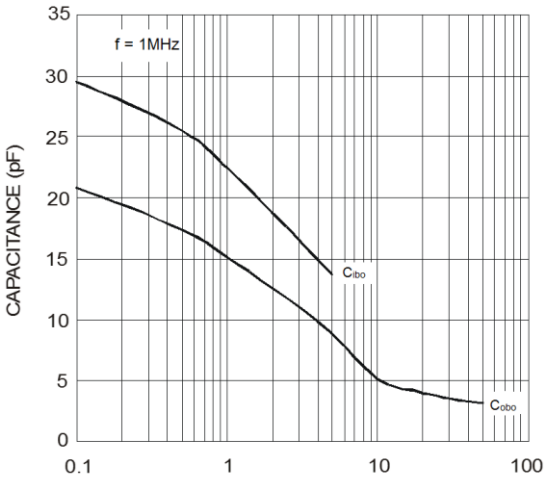


Figure 10. Typical Capacitance Characteristics

Typical Electrical Characteristics (continued)

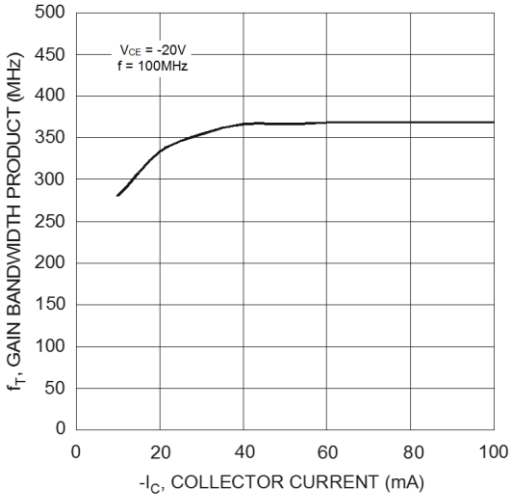
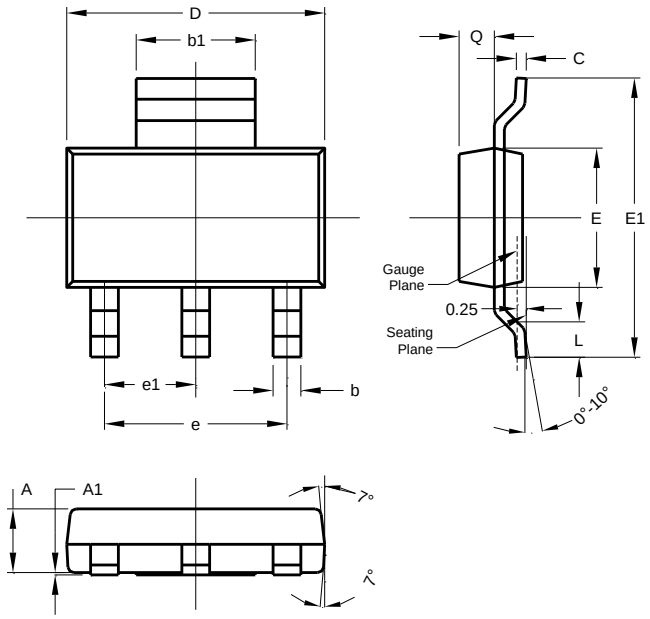


Figure 11. Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

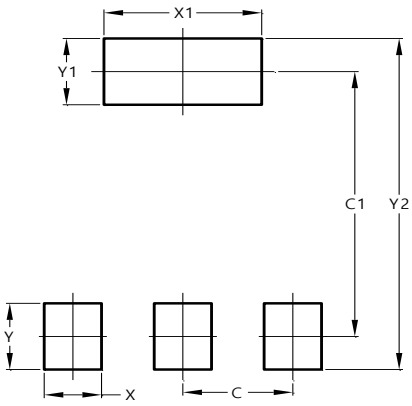
SOT223



SOT223			
Dim	**Min**	**Max**	**Typ**
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

Suggested Pad Layout

SOT223



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00