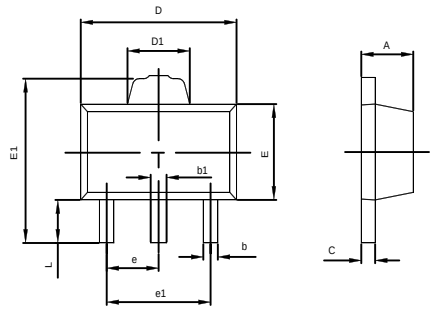
Elektronische Bauelemente

2SD2403Q

Plastic-Encapsulate Transistor

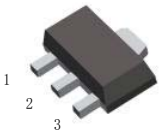
RoHS Compliant Product

SOT-89



Features

- NPN Silicon Epitaxial Planar Transistor for switching and amplifier applications.
- This transistor is also available in the TO-223 case with the type designation PZT2403



1. BASE
2. COLLECTOR
3. EMITTER

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.360	0.560	0.014	0.022
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.400	1.800	0.055	0.071
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP		0.060TYP	
e1	2.900	3.100	0.114	0.122
L	0.900	1.100	0.035	0.043

Mechanical Data

Case: SOT-89 Plastic Package

Weight: approx. 0.016g

Marking Code: 156

Maximum Ratings and Thermal Characteristics

(T_A = 25°C unless otherwise noted)

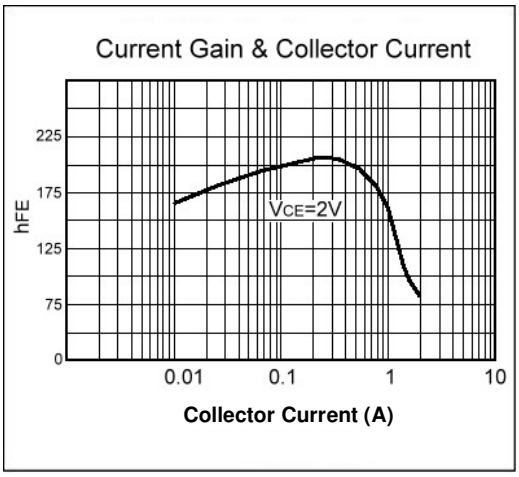
Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	5.0	V
Collector Current (DC) Collector Current (pulse)	I_C I_C	3 6	A
Power Dissipation at T_A = 25°C	P_{tot}	1.0	W
Thermal Resistance Junction to Ambiant Air	$R_{\theta JA}$	150(1)	°C/W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_S	–55 to +150	°C

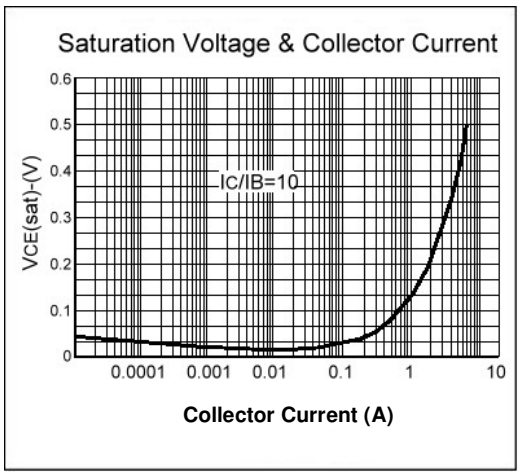
Notes: Device on alumina substrate.

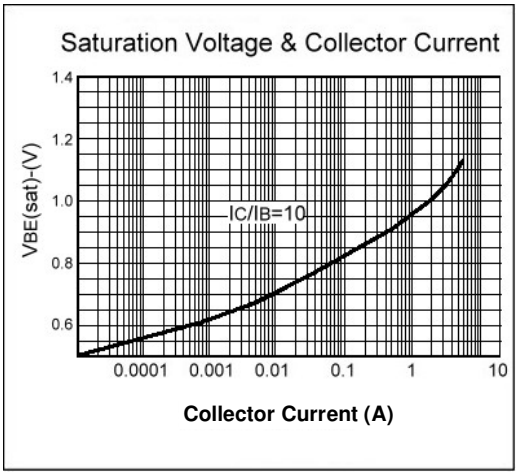
Electrical Characteristics (T_J = 25¡C unless otherwise noted)

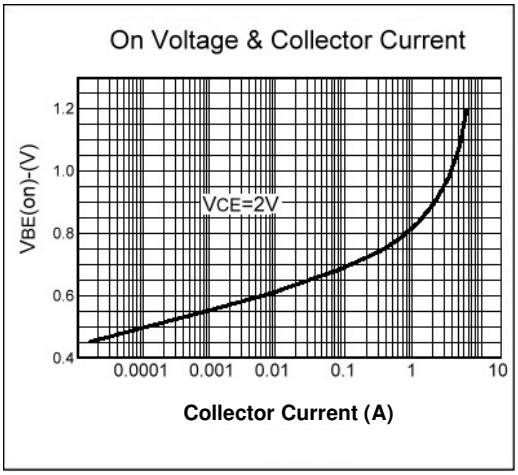
f = 30MHz

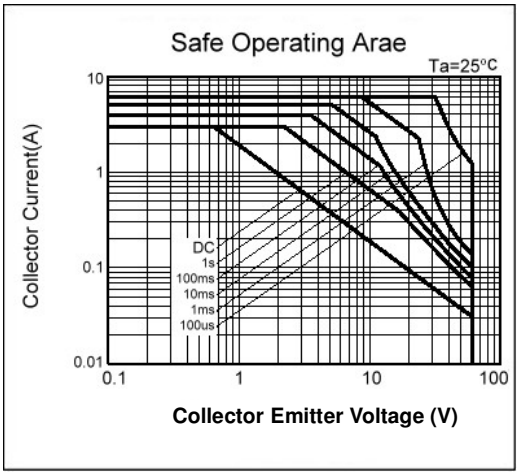
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	V_{CBO}	I_C = 100uA, I_E = 0	80	-	-	V
Collector-Emitter Breakdown Voltage	V_{CEO}	I_C = 10mA, I_B = 0	60	-	-	V
Emitter-Base Breakdown Voltage	V_{EBO}	I_E = 100uA, I_C = 0	5	-	-	V
Emitter Cotoff Current	I_{EBO}	V_{CE} = 4V, I_C = 0	-	-	100	nA
Collector Cutoff Current	I_{CBO}	V_{CB} = 60V, I_E = 0	-	-	100	nA
Collector-emitter Saturation Voltage 1	$V_{CE(sat)1}$	I_C = 1A, I_B = 0.1A	-	0.12	0.2	V
Collector-emitter Saturation Voltage 2	$V_{CE(sat)2}$	I_C = 3A, I_B = 0.3A	-	0.43	0.6	V
Base-emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 1A, I_B = 0.1A	-	0.9	1.25	V
Base-emitter xxx Voltage	$V_{BE(on)}$	I_C = 1A, V_{CE} = 2V	-	0.8	1.0	V
DC Current Gain 1	h_{FE1}	V_{CE} = 2V, I_C = 50 mA	70	200	-	
DC Current Gain 2	h_{FE2}	V_{CE} = 2V, I_C = 500 mA	100	200	300	
DC Current Gain 3	h_{FE3}	V_{CE} = 2V, I_C = 1 A	80	170	-	
DC Current Gain 4	h_{FE4}	V_{CE} = 2V, I_C = 2 A	40	80	-	
Gain-Bandwidth Product	f_T	V_{CE} = 5V, I_C = 100 mA f=100MHz	140	175	-	MHz
On-Time	t_{on}	V_{CC} = 10V, I_C = 500 mA I_{B1} = I_{B2} = 50mA	-	45	-	ns
Off-Time	t_{off}		-	800	-	
Output Capacitance	C_{ob}	V_{CB} = 10V, f = 2 MHz	-	-	30	pF

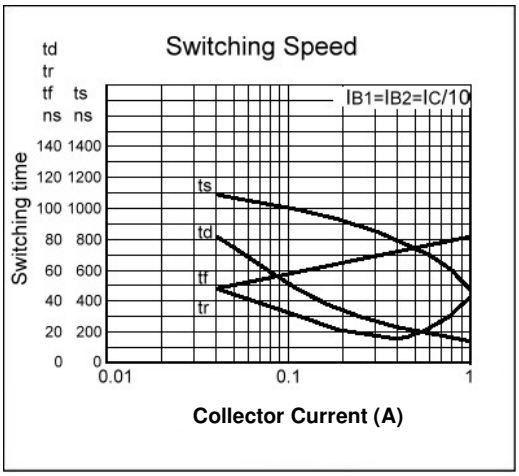

Current Gain & Collector Current
hFE
225
175
125
75
0
VCE=2V
0.01
0.1
1
10
Collector Current (A)


Saturation Voltage & Collector Current
VCE(sat)-(V)
0.6
0.5
0.4
0.3
0.2
0.1
0
IC/IB=10
0.0001
0.001
0.01
0.1
1
10
Collector Current (A)


Saturation Voltage & Collector Current
VBE(sat)-(V)
1.4
1.2
1.0
0.8
0.6
IC/IB=10
0.0001
0.001
0.01
0.1
1
10
Collector Current (A)


On Voltage & Collector Current
VBE(on)-(V)
1.2
1.0
0.8
0.6
0.4
VCE=2V
0.0001
0.001
0.01
0.1
1
10
Collector Current (A)


Safe Operating Arae
Ta=25°C
Collector Current(A)
10
1
0.1
0.01
DC
1s
100ms
10ms
1ms
100us
0.1
1
10
100
Collector Emitter Voltage (V)


Switching Speed
td
tr
tf ts
ns ns
140 1400
120 1200
100 1000
80 800
60 600
40 400
20 200
0 0
IB1=IB2=IC/10
Switching time
ts
td
tf
tr
0.01
0.1
1
Collector Current (A)