



Dual Bias Resistor Transistors

NPN and PNP Silicon Surface Mount Transistors with Monolithic Bias Resistor Network

FEATURES

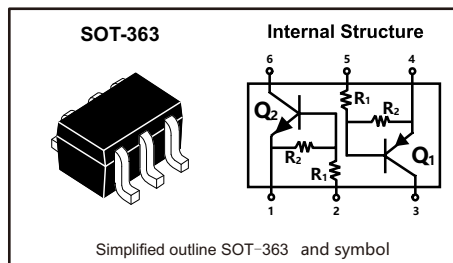
- Epitaxial Planar Die Construction
- Built-In Biasing Resistors
- Simplifies Circuit Design
- Reduces Board Space and Component Count

DEVICE RESISTOR VALUES

Type	Marking	R1(KΩ)	R2(KΩ)
JDTE214EWH	1E4	10	10
JDTE224EWH	2E4	22	22
JDTE244EWH	4E4	47	47
JDTE214YWH	1Y4	10	47
JDTE214TWH	1T4	10	-
JDTE243TWH	4T3	4.7	-
JDTE213EWH	1E3	1	1
JDTE223EWH	2E3	2.2	2.2
JDTE243EWH	4E3	4.7	4.7
JDTE243ZWH	4Z3	4.7	47
JDTE224XWH	2X4	22	47
JDTE223JWH	2J3	2.2	47

PINNING

PIN	DESCRIPTION
2,5	BASE
1,4	EMITTER
3,6	COLLECTOR



Absolute Maximum Ratings And Characteristics (Ta = 25°C)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V _{CB0}	50	V
Collector-Emitter Voltage	V _{CEO}	50	V
Collector Current	I _c	100	mA
Total Power Dissipation @ T _A = 25°C Derate above 25°C	P _D	246 1.5	mW °C/W

THERMAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Thermal Resistance – Junction-to-Ambient	R _{θJA}	508	°C/W
Operating and Storage Temperature Range	T _J , T _{stg}	-55 to +150	°C
Maximum Temperature for Soldering Purposes, Time in Solder Bath	T _L	260 10	°C Sec



ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector-BaseCutoffCurrent	I _{CBO}	V _{CB} =50V, I _E =0			100	nA
Collector-EmitterCutoffCurrent	I _{CEO}	V _{CE} =50V, I _B =0			0.5	uA
Emitter-BaseCutoffCurrent	I _{EBO}	V _{EB} =6.0V, I _C =0			0.5 0.2 0.1 0.2 0.9 1.9 4.3 2.3 1.5 0.18 0.13 0.2	mA
Collector-BaseBreakdownVoltage	V _{(BR)CBO}	I _C =10uA, I _E =0	50			V
Collector-EmitterBreakdownVoltage	V _{(BR)CEO}	I _C =2.0mA, I _B =0	50			V
ON CHARACTERISTICS						
DCCurrentGain	h _{FE}	V _{CE} =10V, I _C =5mA	35 60 80 80 160 160 3.0 8.0 15 80 80 80	60 100 140 140 350 350 5.0 15 30 200 150 140		
Collector-EmitterSaturationVoltage	V _{CE(sat)}	I _C =10mA, I _B =0.3mA I _C =10mA, I _B =0.3mA I _C =10mA, I _B =0.3mA I _C =10mA, I _B =0.3mA I _C =10mA, I _B =1mA I _C =10mA, I _B =1mA I _C =10mA, I _B =5mA I _C =10mA, I _B =5mA I _C =10mA, I _B =1mA I _C =10mA, I _B =1mA I _C =10mA, I _B =1mA I _C =10mA, I _B =0.3mA			0.25	V
ON CHARACTERISTICS						
OutputVoltage(on)	V _{OL}	V _{CC} =5.0V V _B =2.5V R _L =1.0k V _{CC} =5.0V V _B =2.5V R _L =1.0k V _{CC} =5.0V V _B =3.5V R _L =1.0k V _{CC} =5.0V V _B =2.5V R _L =1.0k V _{CC} =5.0V V _B =2.5V R _L =1.0k V _{CC} =5.0V V _B =2.5V R _L =1.0k V _{CC} =5.0V V _B =2.5V R _L =1.0k V _{CC} =5.0V V _B =2.5V R _L =1.0k V _{CC} =5.0V V _B =2.5V R _L =1.0k V _{CC} =5.0V V _B =2.5V R _L =1.0k V _{CC} =5.0V V _B =2.5V R _L =1.0k V _{CC} =5.0V V _B =2.5V R _L =1.0k V _{CC} =5.0V V _B =2.5V R _L =1.0k			0.2	V

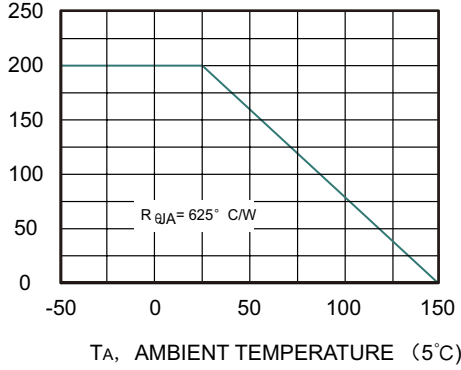


Parameter	Symbol	Conditions	Min	Typ	Max	Unit
OutputVoltage(off)	V_{OH}	VCC=5.0V VB=0.5V RL=1.0k VCC=5.0V VB=0.5V RL=1.0k VCC=5.0V VB=0.5V RL=1.0k VCC=5.0V VB=0.5V RL=1.0k VCC=5.0V VB=0.25V VCC=5.0V VB=0.25V VCC=5.0V VB=0.05V VCC=5.0V VB=0.5V RL=1.0k VCC=5.0V VB=0.5V RL=1.0k VCC=5.0V VB=0.25V VCC=5.0V VB=0.5V RL=1.0k VCC=5.0V VB=0.5V RL=1.0k	4.9			V
InputResistor	R_i		7 15.4 32.9 7 7 3.3 0.7 1.5 3.3 3.3 15.4 1.54	10 22 47 10 10 4.7 1 2.2 4.7 4.7 22 2.2	13 28.6 61.1 13 13 6.1 1.3 2.9 6.1 6.1 28.6 2.86	k Ω
ResistorRatio	R_1/R_2		0.8 0.8 0.8 0.17 - - 0.8 0.8 0.8 0.055 0.38 0.038	1 1 1 0.21 - - 1 1 1 0.1 0.47 0.047	1.2 1.2 1.2 0.25 - - 1.2 1.2 1.2 0.185 0.56 0.056	



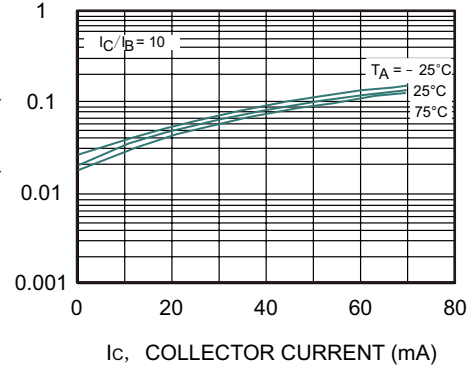
P_D POWER DISSIPATION (MILLIWATTS)

Figure 1. Derating Curve



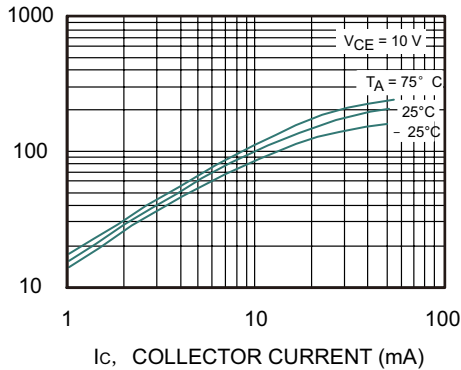
V_{CE(sat)}, MAXIMUM COLLECTOR VOLTAGE (VOLTS)

Figure 2. V_{CE(sat)} vs. I_C



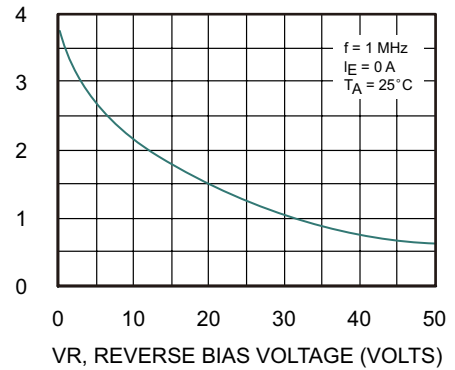
h_{FE}, DC CURRENT GAIN (NORMALIZED)

Figure 3. DC Current Gain



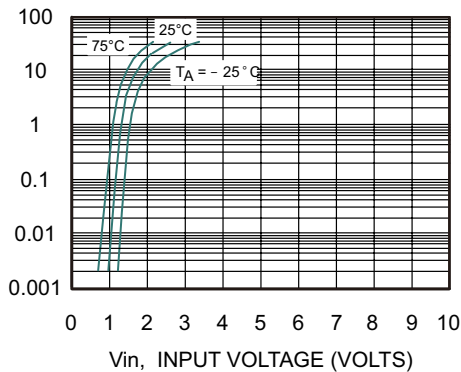
C_{ob}, CAPACITANCE (pF)

Figure 4. Output Capacitance



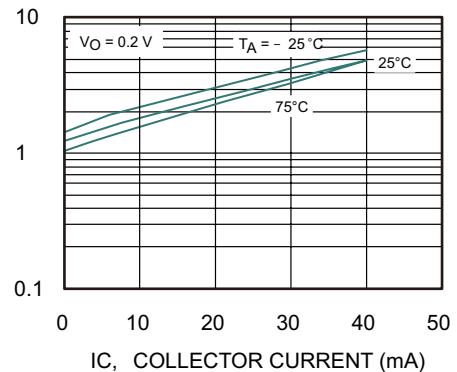
I_C, COLLECTOR CURRENT (mA)

Figure 5. Output Current vs. Input Voltage



V_{in}, INPUT VOLTAGE (VOLTS)

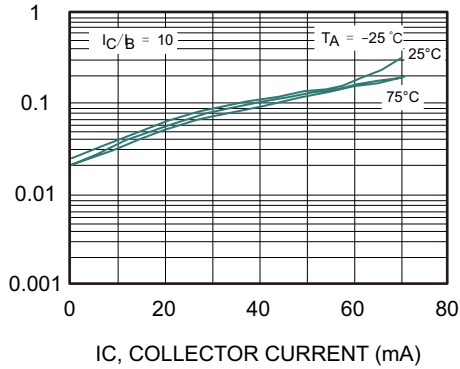
Figure 6. Input Voltage vs. Output Current





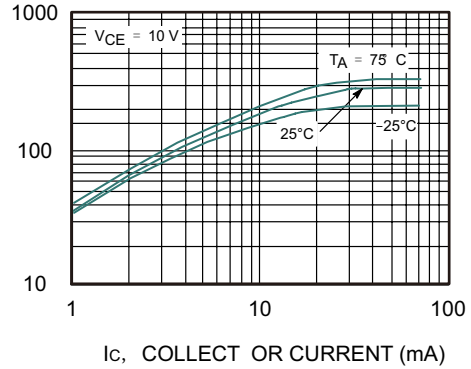
VCE(sat), MAXIMUM COLLECTOR VOLTAGE (VOLTS)

Figure 7. VCE(sat) vs. IC



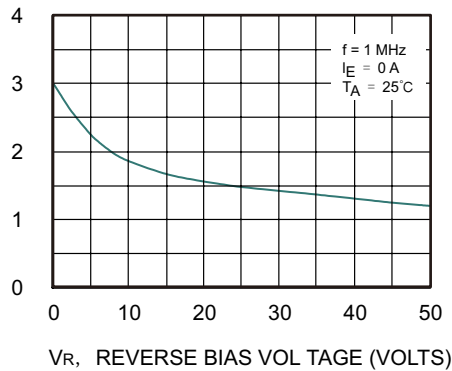
hFE DC CURRENT GAIN (NORMALIZED)

Figure 8. DC Current Gain



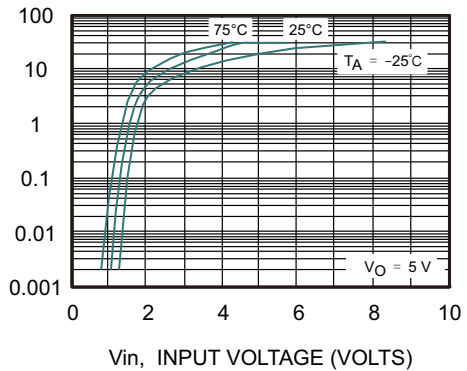
Cob, CAPACITANCE (pF)

Figure 9. Output Capacitance



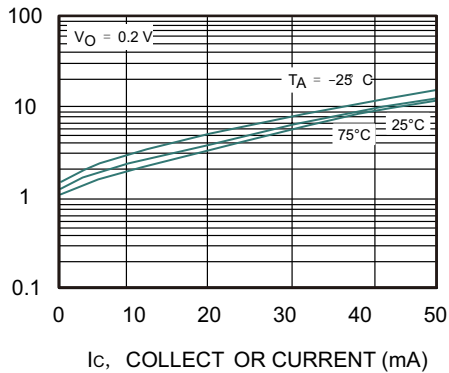
IC COLLECTOR CURRENT (mA)

Figure 10. Output Current vs. Input Voltage



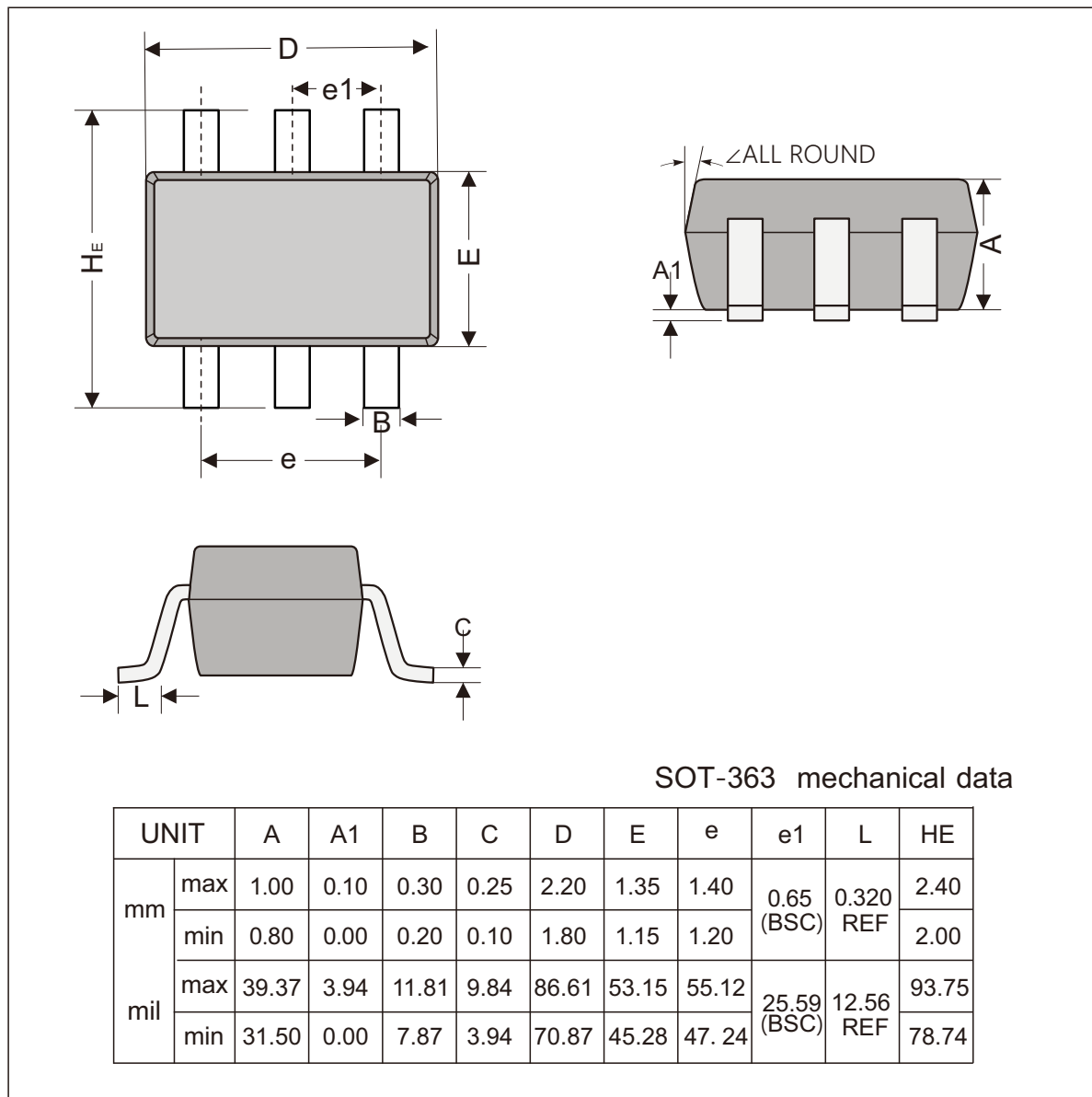
Vin, INPUT VOLTAGE (VOLTS)

Figure 11. Input Voltage vs. Output Current

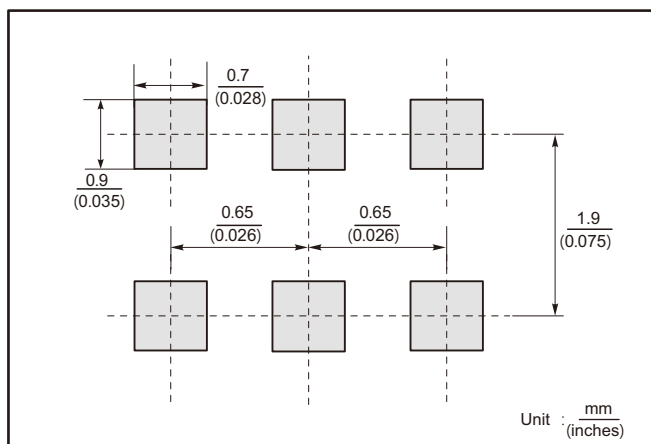




SOT-363 Package Outline Dimensions



The recommended mounting pad size





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