



DTD113Z

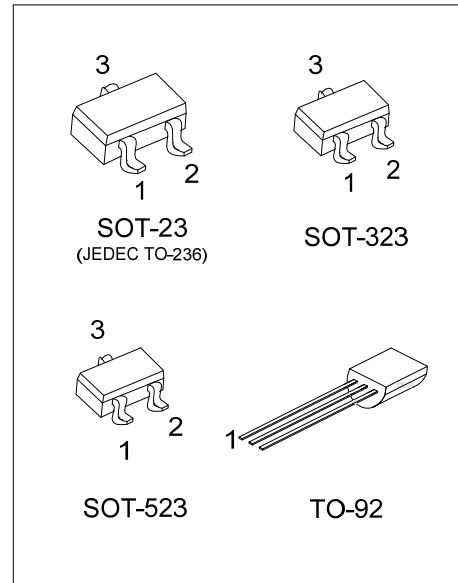
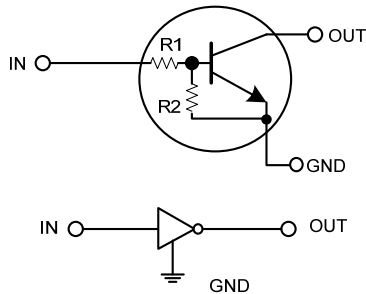
NPN SILICON TRANSISTOR

NPN DIGITAL TRANSISTOR (BUILT-IN BIAS RESISTORS)

■ FEATURES

- * Built-in bias resistors that implies easy ON/OFF applications.
- * The bias resistors are thin-film resistors with complete isolation to allow negative input.

■ EQUIVALENT CIRCUIT



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
DTD113ZL-AE3-R	DTD113ZG-AE3-R	SOT-23	I	G	O	Tape Reel
DTD113ZL-AL3-R	DTD113ZG-AL3-R	SOT-323	I	G	O	Tape Reel
DTD113ZL-AN3-R	DTD113ZG-AN3-R	SOT-523	I	G	O	Tape Reel
DTD113ZL-T92-B	DTD113ZG-T92-B	TO-92	G	O	I	Tape Box
DTD113ZL-T92-K	DTD113ZG-T92-K	TO-92	G	O	I	Bulk

Note: Pin Assignment: I: IN G: GND O: OUT

<p>DTD113ZG-AE3-R</p>	<p>(1) B: Tape Box, K: Bulk, R: Tape Reel (2) AE3: SOT-23, AL3: SOT-323, AN3: SOT-523 T92: TO-92 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

SOT-23 / SOT-323 / SOT-523	TO-92

■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless others specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		V _{CC}	50	V
Input Voltage		V _{IN}	-5 ~ +10	V
Output Current		I _{OUT}	500	mA
Power Dissipation	SOT-23/SOT-323	P _C	200	mW
	SOT-523		150	mW
	TO-92		625	mW
Junction Temperature		T _J	+150	°C
Storage Temperature		T _{STG}	-55 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ _{JA}	625	°C/W

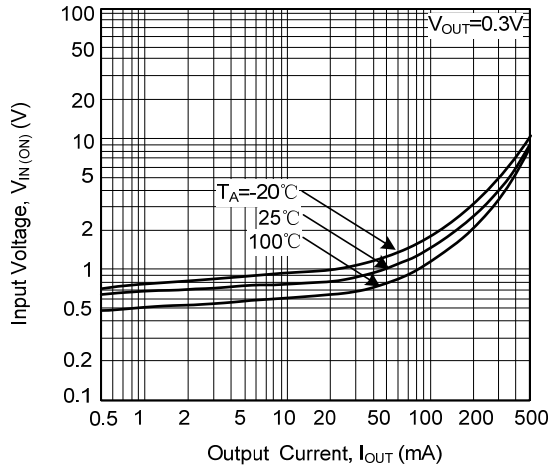
■ ELECTRICAL SPECIFICATIONS (T_A=25°C, unless others specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage	V _{IN(OFF)}	V _{CC} = 5V, I _{OUT} = 100μA			0.3	V
	V _{IN(ON)}	V _{OUT} = 0.3V, I _{OUT} = 20mA	1.5			
Collector Cut-off Current	I _{CBO}	V _{CB} = 50V			100	nA
Collector Cut-off Current	I _{CEO}	V _{CE} = 50V			0.5	μA
Output Voltage	V _{OUT(ON)}	I _{OUT} /I _{IN} = 50mA/2.5mA		0.1	0.3	V
Input Current	I _{IN}	V _{IN} = 5V			7.2	mA
Output Current	I _{OUT(OFF)}	V _{CC} = 50V, V _{IN} = 0V			0.5	μA
DC Current Gain	h _{FE}	V _{OUT} = 5V, I _{OUT} = 50mA	82			
Input Resistance	R ₁		0.7	1	1.3	KΩ
Resistor Ratio	R ₂ /R ₁		8	10	12	
Transition Frequency	f _T	V _{CE} = 10V, I _E = -50mA, f = 100MHz (Note)		200		MHz

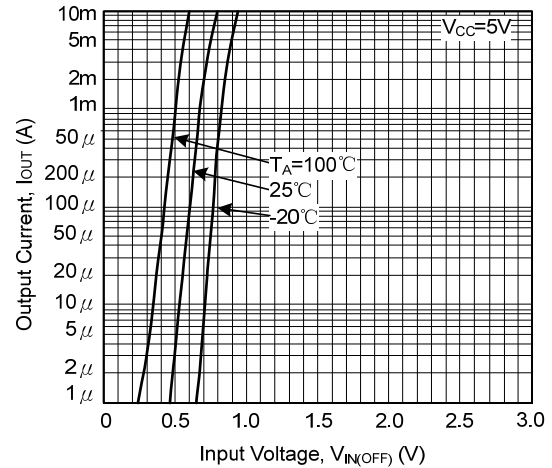
Note: Transition frequency of the device.

TYPICAL CHARACTERISTICS

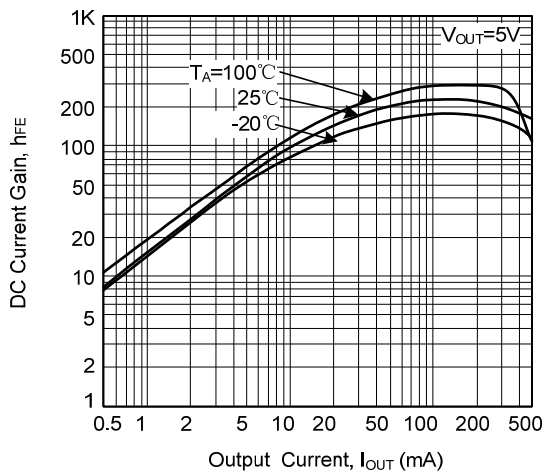
Input Voltage vs. Output Current
(ON Characteristics)



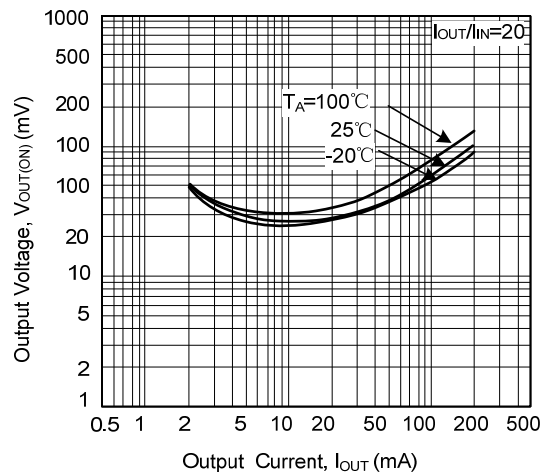
Output Current vs. Input Voltage
(OFF Characteristics)



DC Current Gain vs. Output Current



Output Voltage vs. Output Current



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