

Digital Transistor

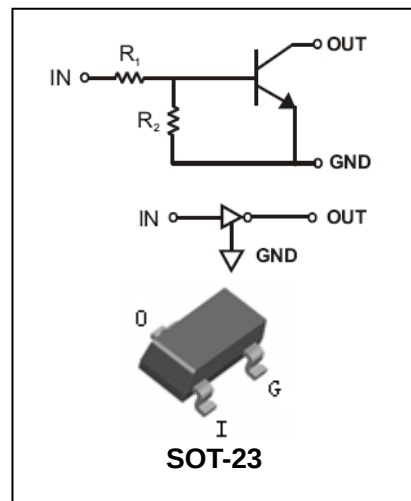
DTC(R₁≠R₂ SERIES)CA

FEATURES

- Epitaxial planar die construction.
- Complementary PNP types available(DTA).
- Built-in biasing resistors, R₁≠R₂.
- Also available in lead free version.

APPLICATIONS

- The NPN style digital transistor.



MAXIMUM RATING @ Ta=25°C unless otherwise specified

Symbol	Parameter	Value	Units
V _{CC}	Supply Voltage	50	V
V _{IN}	Input Voltage	DTC113ZCA -5 to+10 DTC114WCA -10 to+30 DTC114YCA -6 to +40 DTC123JCA -5 to+12 DTC123YCA -5 to+12 DTC143XCA -7 to+20 DTC143ZCA -5 to+30	V
I _O	Output Current	DTC113ZCA 100 DTC114WCA 100 DTC114YCA 70 DTC123JCA 100 DTC123YCA 100 DTC143XCA 100 DTC143ZCA 100	mA
I _C (Max.)	Output current	ALL 100	mA
P _D	Power Dissipation	200	mW

Symbol	Parameter	Value	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient Air	625	°C/W
T_j, T_{stg}	Operating and Storage and Temperature Range	-55 to +150	°C

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

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Input Voltage	DTC113ZCA DTC114WCA DTC114YCA DTC123JCA DTC123YCA DTC143XCA DTC143ZCA	$V_{I(off)}$ $V_{CC}=5V, I_O=100\mu A$	0.3 0.8 0.3 0.5 0.3 0.3 0.5	-	-	V
Input Voltage	DTC113ZCA DTC114WCA DTC114YCA DTC123JCA DTC123YCA DTC143XCA DTC143ZCA	$V_{I(on)}$ $V_O=0.3V, I_O=20mA$ $V_O=0.3V, I_O=2mA$ $V_O=0.3V, I_O=1mA$ $V_O=0.3V, I_O=5mA$ $V_O=0.3V, I_O=20mA$ $V_O=0.3V, I_O=20mA$ $V_O=0.3V, I_O=5mA$	-	-	3.0 3.0 1.4 1.1 3.0 2.5 1.3	V
Output Voltage	DTC123JCA DTC143ZCA DTC114YCA ALL Others	$V_{O(on)}$ $I_O/I_I=5mA/0.25mA$ $I_O/I_I=10mA/0.5mA$	-	0.1	0.3	V
Input Current	DTC113ZCA DTC114WCA DTC114YCA DTC123JCA DTC123YCA DTC143XCA DTC143ZCA	I_I $V_I=5V$	-	-	7.2 0.88 0.88 3.6 3.8 1.8 1.8	mA
Output Current		$I_{O(off)}$ $V_{CC}=50V, V_I=0V$	-	-	0.5	μA
DC Current Gain	DTC113ZCA DTC114WCA DTC114YCA DTC123JCA DTC123YCA DTC143XCA DTC143ZCA	G_I $V_O=5V, I_O=10mA$	33 24 68 80 33 30 80	-	-	

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Input Resistor	DTC113ZCA DTC114WCA DTC114YCA DTC123JCA DTC123YCA DTC143XCA DTC143ZCA	$R_1(R_2)$	0.7 7 7 1.54 1.54 3.29 3.29	1(10) 10(4.7) 10(47) 2.2(47) 2.2(10) 4.7(10) 4.7(47)	1.3 13 13 2.86 2.86 6.11 6.11	$k\Omega$
Input Resistor (R_1) Tolerance	ΔR_1	-	-30		+30	%
Resistance Ratio Tolerance	$\Delta R_2/R_1$	-	-20		+20	%
Gain-Bandwidth Product	f_T	$V_{CE}=10V, I_E=5mA,$ $f=100MHz$	-	250	-	MHz

TYPICAL CHARACTERISTICS @ $T_a=25^\circ C$ unless otherwise specified

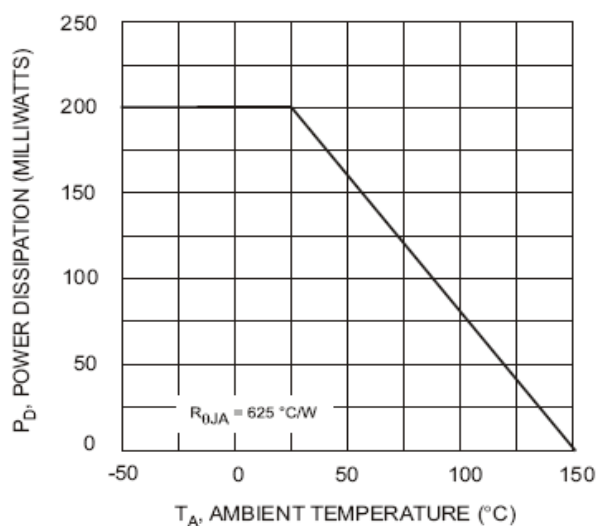


Fig. 1 Derating Curve

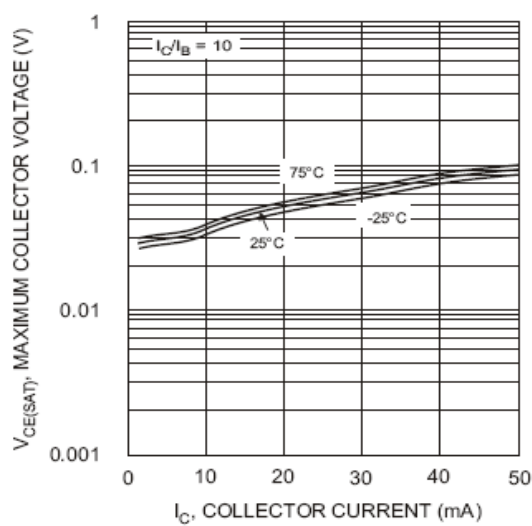


Fig. 2 $V_{CE(SAT)}$ vs. I_C

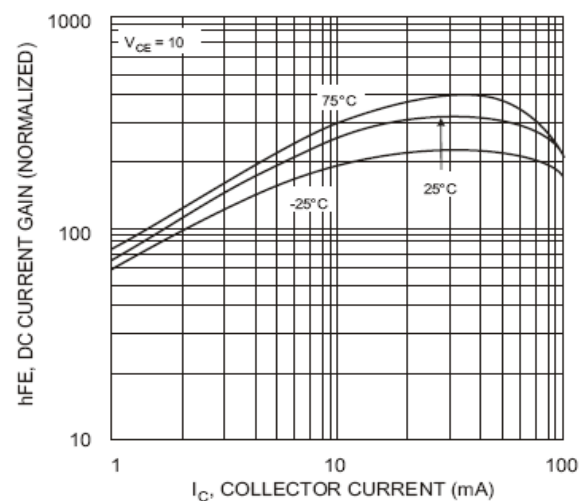


Fig. 3 DC CURRENT GAIN

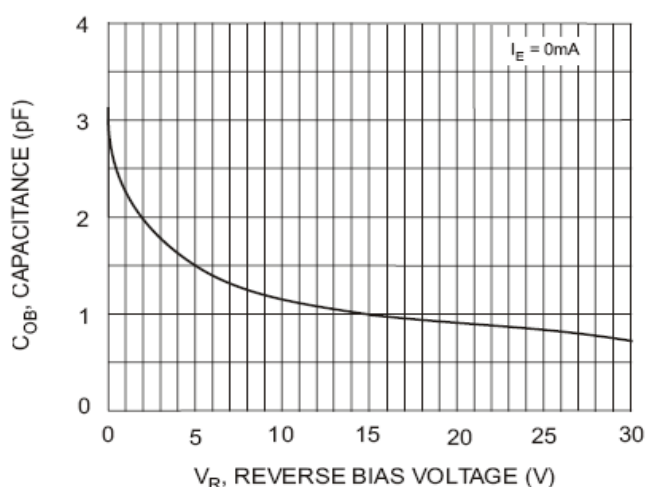


Fig. 4 Output Capacitance

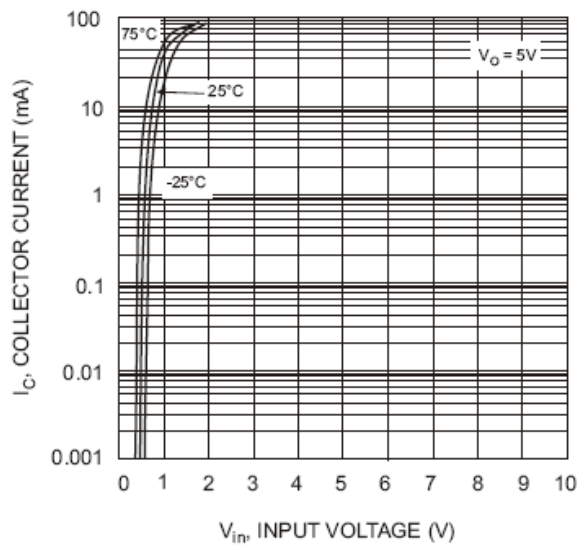


Fig. 5 Collector Current Vs. Input Voltage

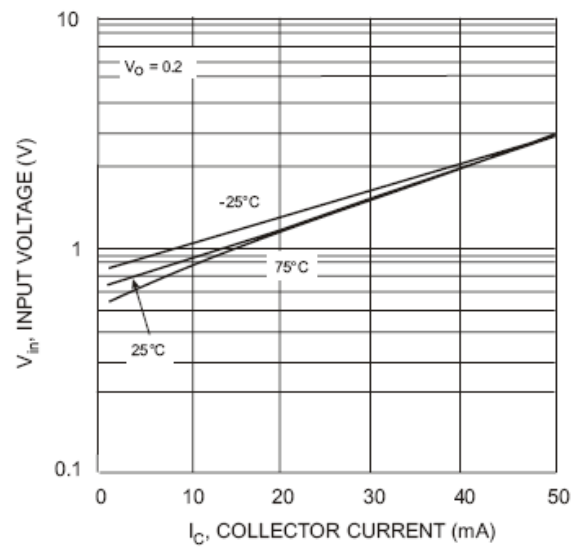


Fig. 6 Input Voltage vs. Collector Current