

**Features**

- DTC114E and 2SA2018 Are Housed Independently In a Package
- Mounting Cost and Area Can Be Cut In Half
- Halogen Free. "Green" Device (Note 1)
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

**Maximum Ratings @ 25°C Unless Otherwise Specified**

**TR1**

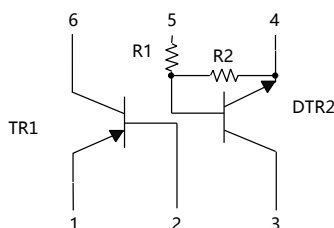
Parameter	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	-12	V
Collector-Base Voltage	$V_{CBO}$	-15	V
Emitter-Base Voltage	$V_{EBO}$	-6	V
Collector Current-Continuous	$I_C$	-500	mA
Collector Dissipation	$P_C$	150	mW
Junction Temperature	$T_J$	150	°C
Storage Temperature Range	$T_{STG}$	-55 to +150	°C

**DTR2**

Parameter	Symbol	Value	Unit
Supply Voltage	$V_{CC}$	50	V
Input Voltage	$V_{IN}$	-10~40	V
Output Current	$I_O$	50	mA
	$I_{C(Max)}$	100	mA
Power Dissipation	$P_D$	150	mW
Junction Temperature	$T_J$	150	°C
Storage Temperature	$T_{stg}$	-55~150	°C

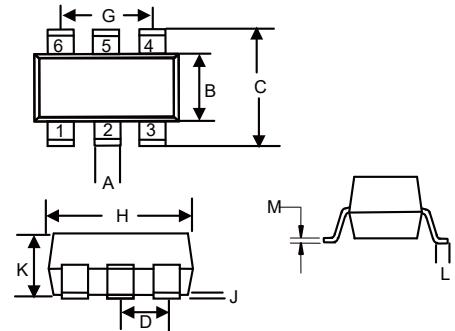
Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

**Internal Structure**



**Dual Digital Transistor**

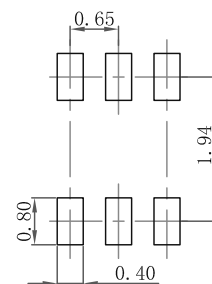
**SOT-363**



**DIMENSIONS**

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.006	0.014	0.15	0.35	
B	0.045	0.053	1.15	1.35	
C	0.079	0.096	2.00	2.45	
D	0.026		0.65		TYP
G	0.047	0.055	1.20	1.40	
H	0.071	0.087	1.80	2.20	
J	-----	0.004	-----	0.10	
K	0.031	0.043	0.80	1.10	
L	0.010	0.018	0.26	0.46	
M	0.003	0.006	0.08	0.15	

**Suggested Solder Pad Layout**



**Electrical Characteristics @ 25°C Unless Otherwise Specified**
**TR1**

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-15	---	---	V	$I_C=-10\mu A, I_E=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-12	---	---	V	$I_C=-1mA, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-6	---	---	V	$I_E=-10\mu A, I_C=0$
Collector Cut-off Current	$I_{CBO}$	---	---	-0.1	$\mu A$	$V_{CB}=-15V, I_E=0$
Emitter Cut-off Current	$I_{EBO}$	---	---	-0.1	$\mu A$	$V_{EB}=-6V, I_C=0$
DC Current Gain	$h_{FE}$	270	---	680	---	$I_C=-10mA, V_{CE}=-2V$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	---	---	-0.25	V	$I_C=-200mA, I_B=-10mA$
Transition Frequency	$f_T$	---	260	---	MHz	$V_{CE}=-2V, I_C=-10mA, f=100MHz$
Collector Output Capacitance	$C_{ob}$	---	6.5	---	pF	$V_{CB}=-10.0V, I_E=0, f=1MHz$

**DTR2**

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Input Voltage	$V_{I(off)}$	0.5	---	---	V	$V_{CC}=5V, I_O=100\mu A$
	$V_{I(on)}$	---	---	3	V	$V_O=0.3V, I_O=10mA$
Output Voltage	$V_{O(on)}$	---	---	0.3	V	$I_O=10mA, I_I=0.5mA$
Input Current	$I_I$	---	---	0.88	mA	$V_I=5V$
Output Current	$I_{O(off)}$	---	---	0.5	$\mu A$	$V_{CC}=50V, V_I=0$
DC Current Gain	$G_I$	30	---	---		$V_O=5V, I_O=5mA$
Input Resistance	$R_1$	7	10	13	K $\Omega$	
Resistance Ratio	$R_2/R_1$	0.8	1.0	1.2		
Transition Frequency	$f_T$	---	250	---	MHz	$V_{CE}=10V, I_E=-5mA, f=100MHz$

Curve Characteristics

Fig. 1 - TR1 Static Characteristics

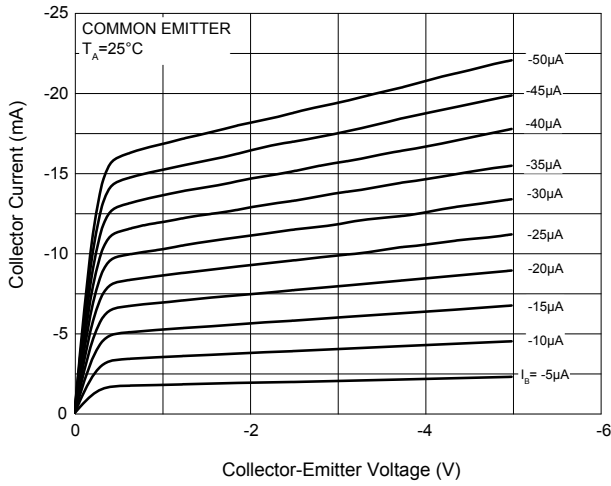


Fig. 2 - TR1 DC Current Gain Characteristics

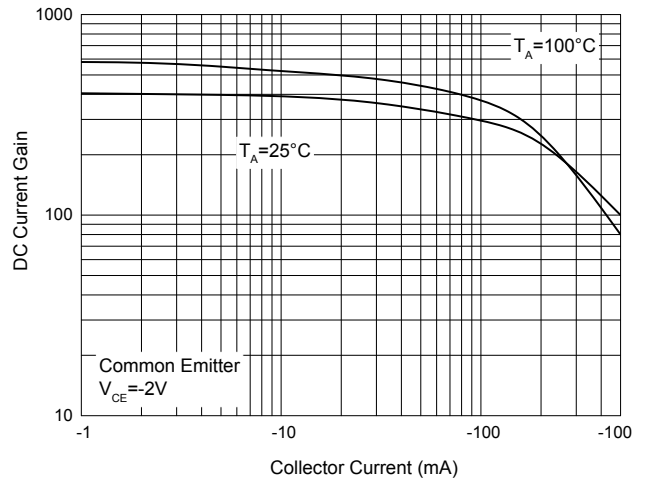


Fig. 3 - TR1 Collector-Emitter Saturation Voltage Characteristics

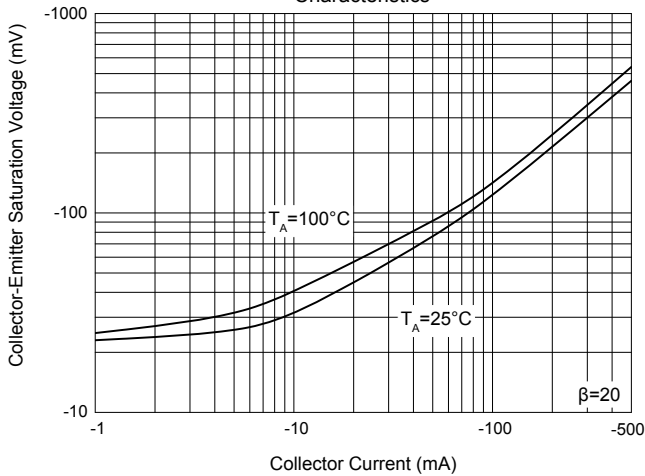


Fig. 4 - DTR2 DC Current Gain Characteristics

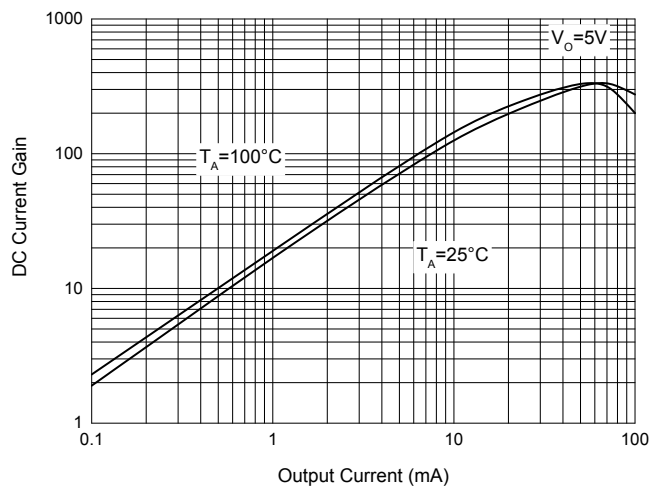


Fig. 5 - DTR2 Input Voltage (on) Characteristics

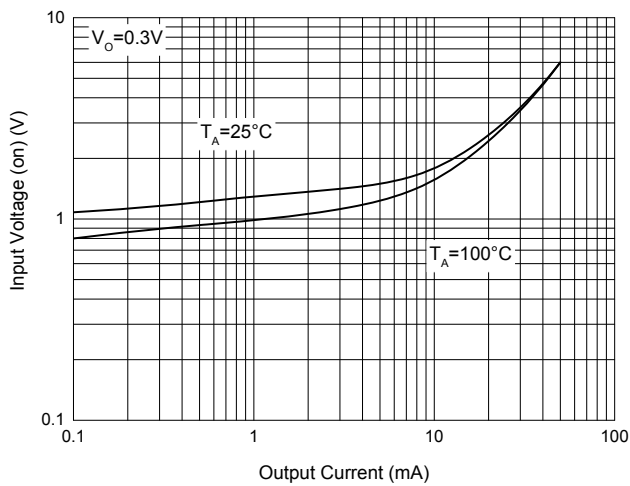
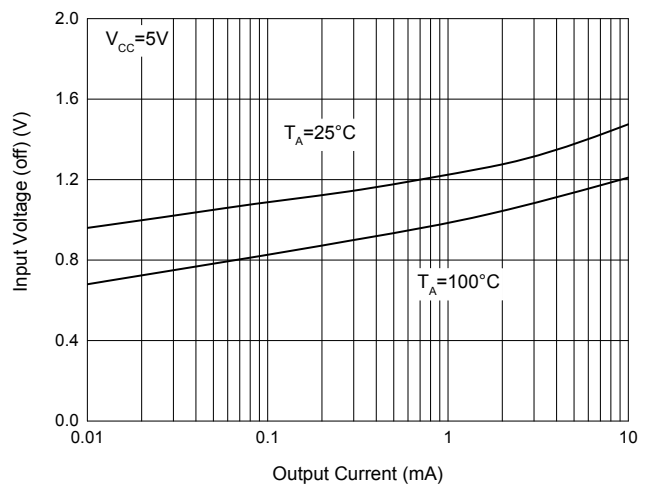


Fig. 6 - DTR2 Input Voltage (off) Characteristics



## Curve Characteristics

Fig. 7 - DTR2 Output Voltage Characteristics

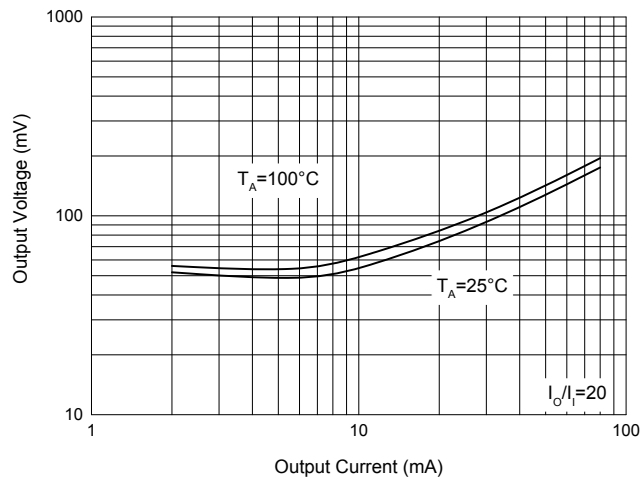
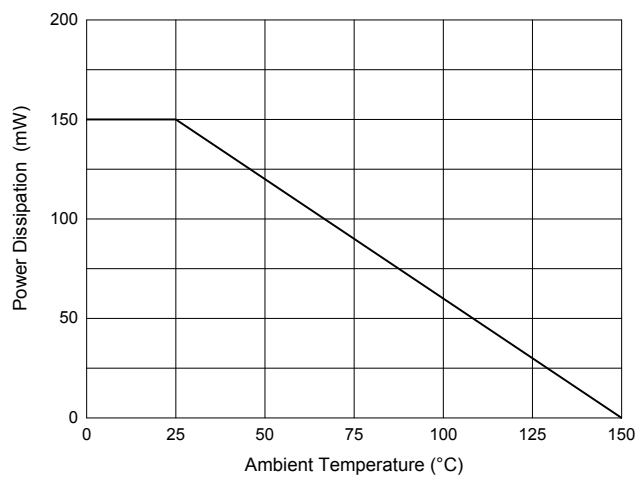


Fig. 8 - Power Derating Curve



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel:3Kpcs/Reel

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