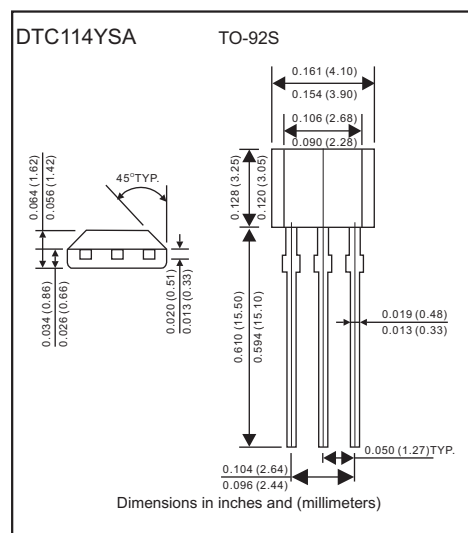
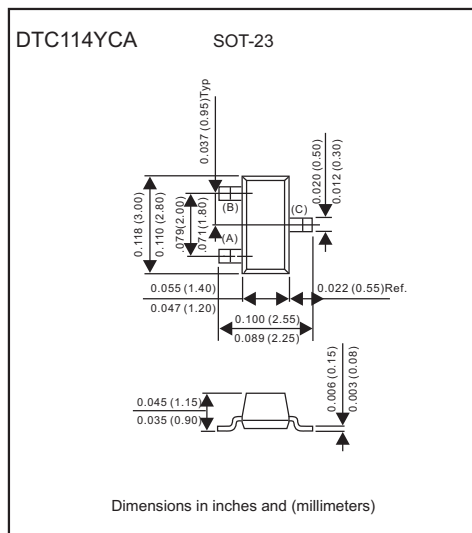
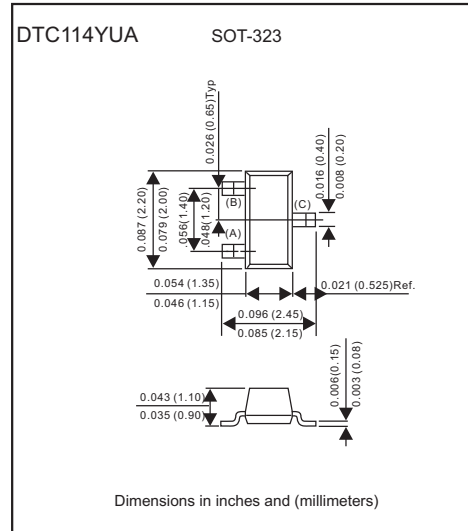
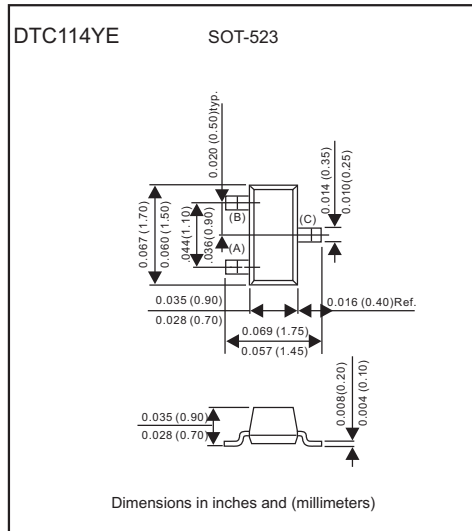


DTC114YE / DTC114YUA / DTC114YCA / DTC114YSA

List

List.....	1
Package outline.....	2
Features.....	2
Mechanical data.....	2
Maximum ratings and electrical characteristics	3
Rating and characteristic curves.....	4
Pinning information.....	5
Marking.....	5
Suggested solder pad layout.....	5
Packing information.....	6
Taping & bulk specifications for TO-92S devices.....	7
Reel packing.....	8
Suggested thermal profiles for soldering processes.....	8

DTC114YE / DTC114YUA / DTC114YCA / DTC114YSA**Digital Transistor (NPN)****Package outline****Features**

- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit)
- The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic effects
- Only the on/off conditions need to be set for operation, making device design easy
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex. DTC114YCA-H.

Mechanical data

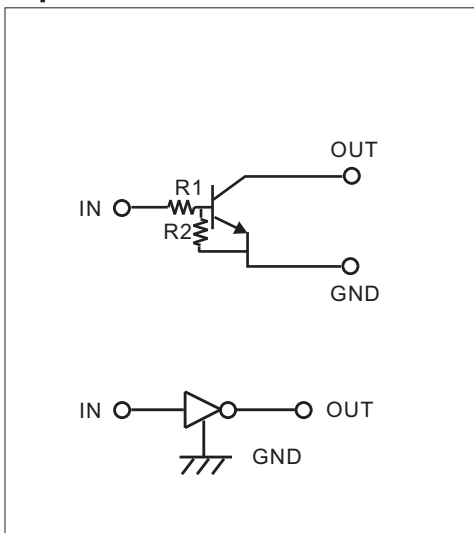
- Epoxy: UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-523, SOT-323, SOT-23, TO-92S
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : 0.003 gram approximated (SOT-523)
0.006 gram approximated (SOT-323)
0.008 gram approximated (SOT-23)
0.180 gram approximated (TO-92S)

DTC114YE / DTC114YUA / DTC114YCA / DTC114YSA**Maximum ratings** (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

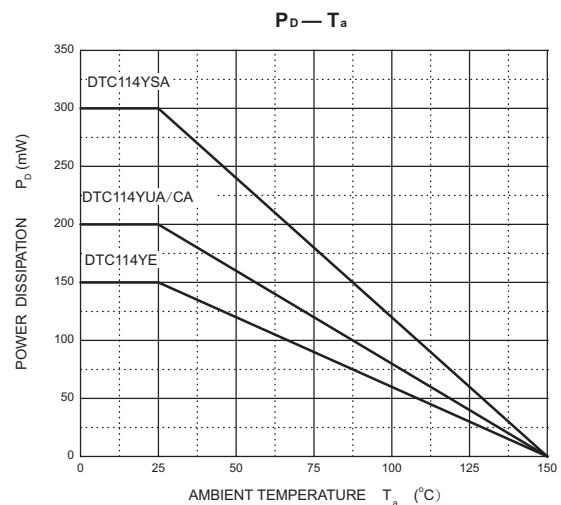
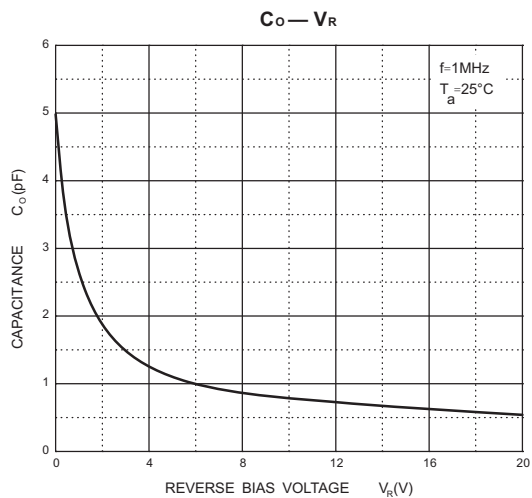
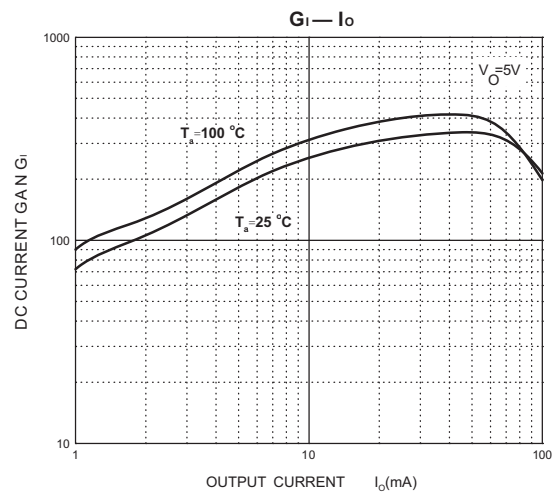
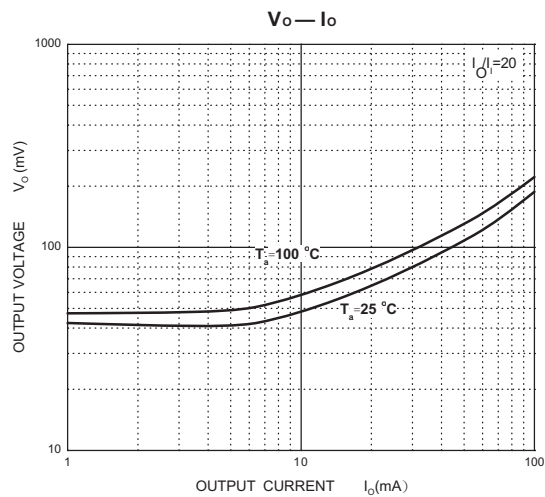
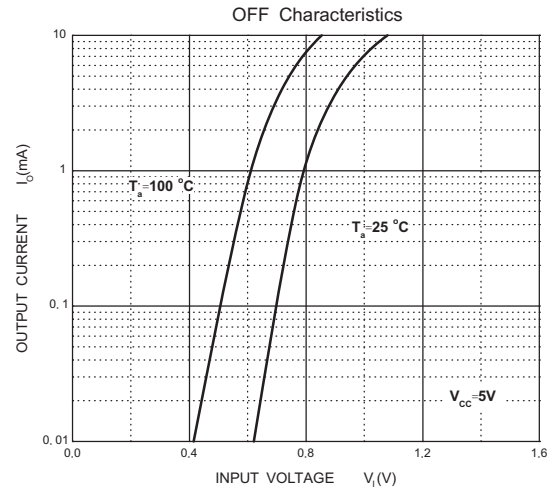
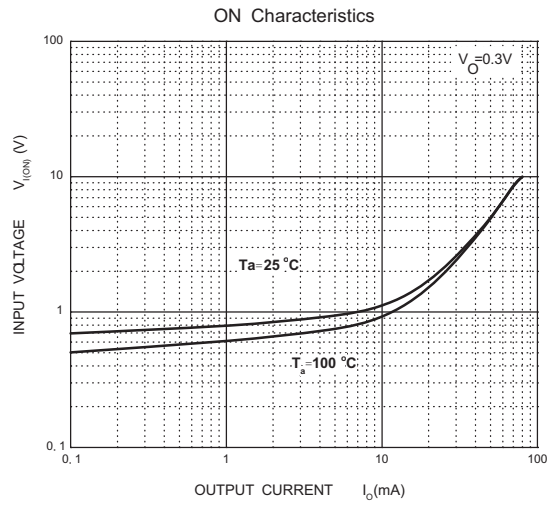
PARAMETER	Symbol	Limits(DTC114Y)				UNIT
		E	UA	CA	SA	
Supply voltage	V _{CC}	50				V
Input voltage	V _{IN}	-6~+40				V
Output current	I _O	70				mA
Peak collector current	I _{C(MAX)}	100				mA
Power dissipation	P _D	150	200		300	mW
Operating junction temperature range	T _J	-55 to +150				°C
Storage temperature range	T _{STG}	-55 to +150				°C

Electrical characteristics (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	Symbol	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Input voltage	$V_{I(off)}$	$V_{CC}=5V, I_O=100\mu A$	0.3			V
	$V_{I(on)}$	$V_O=0.3V, I_O=1mA$			1.4	V
Output voltage	$V_{O(on)}$	$I_O/I_i=5mA/0.25mA$			0.3	V
Input current	I_i	$V_i=5V$			0.88	mA
Output current	$I_{O(off)}$	$V_{CC}=50V, V_i=0$			0.5	uA
DC current gain	G_1	$V_O=5V, I_O=5mA$	68			
Input resistance	R_i		7.0	10	13	k Ω
Resistance ratio	R_2/R_1		3.7	4.7	5.7	
Transition frequency	f_T	$V_O=10V, I_O=5mA, f=100MHz$		250		MHz

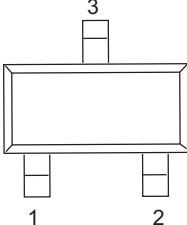
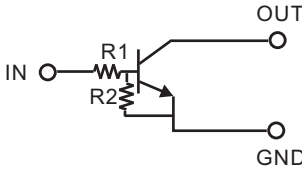
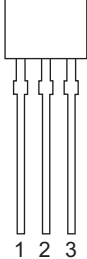
Equivalent Circuit

Rating and characteristic curves



DTC114YE / DTC114YUA / DTC114YCA / DTC114YSA

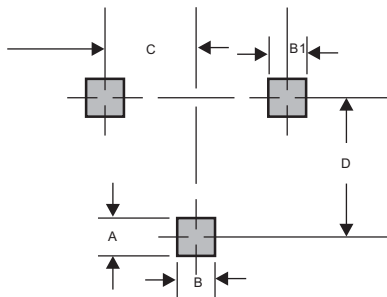
Pinning information

Pin	Simplified outline	Symbol
Pin1 IN Pin2 GND Pin3 OUT		
Pin1 GND Pin2 OUT Pin3 IN		

Marking

Type number	Marking code
DTC114YE	64
DTC114YUA	64
DTC114YCA	64

Suggested solder pad layout

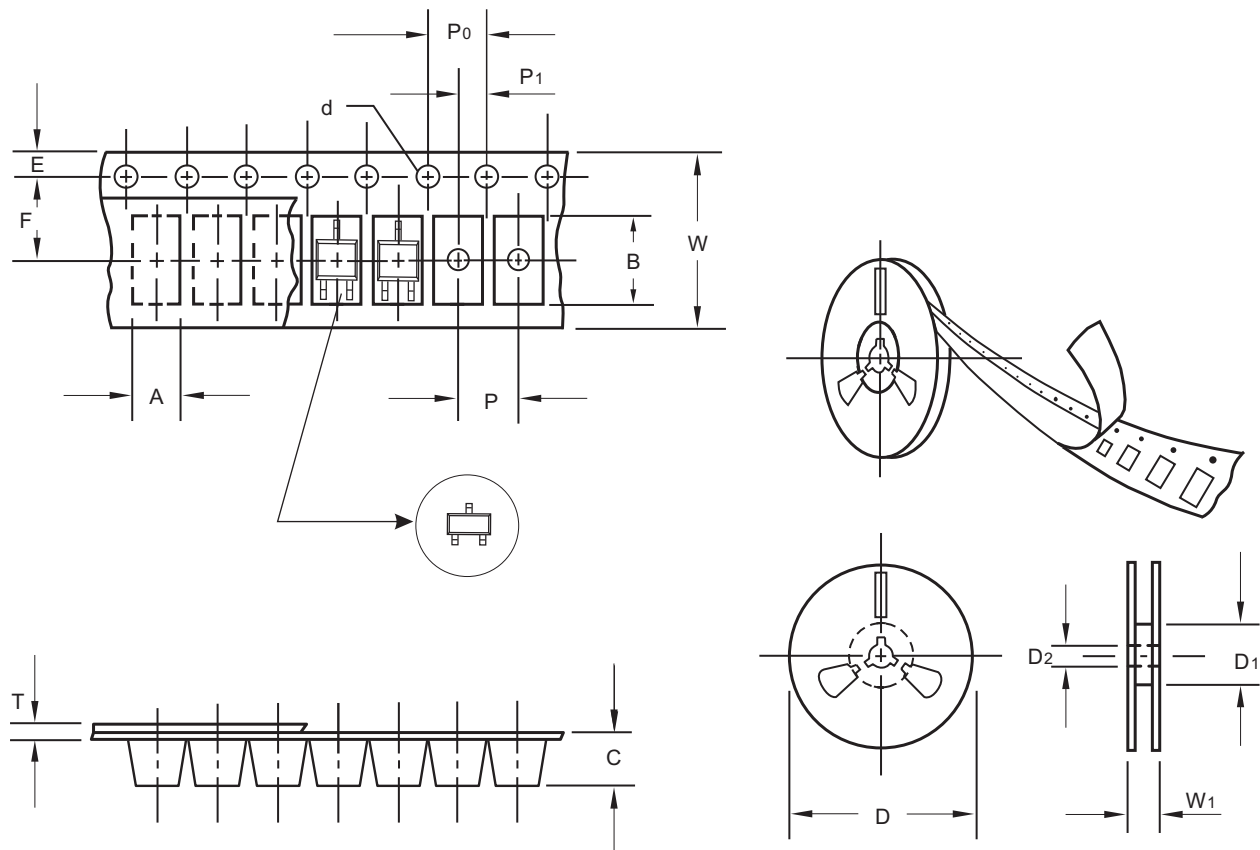


Package	A	B	B1	C	D
SOT-523	0.024(0.60)	0.020(0.50)	0.016(0.40)	0.020(0.50)	0.049(1.24)
SOT-323	0.032(0.80)	0.020(0.50)	-	0.025(0.65)	0.087(2.20)
SOT-23	0.035(0.90)	0.031(0.80)	-	0.037(0.95)	0.079(2.00)

Dimensions in inches and (millimeters)

DTC114YE / DTC114YUA / DTC114YCA / DTC114YSA

Packing information



unit:mm

Item	Symbol	Tolerance	SOT-523	SOT-323	SOT-23
Carrier width	A	0.1	1.85	2.25	3.15
Carrier length	B	0.1	1.85	2.55	2.77
Carrier depth	C	0.1	0.875	1.19	1.22
Sprocket hole	d	0.1	1.50	1.50	1.50
13" Reel outside diameter	D	2.0	-	-	-
13" Reel inner diameter	D1	min	-	-	-
7" Reel outside diameter	D	2.0	178.00	178.00	178.00
7" Reel inner diameter	D1	min	54.40	54.40	54.40
Feed hole diameter	D2	0.5	13.00	13.00	13.00
Sprocket hole position	E	0.1	1.75	1.75	1.75
Punch hole position	F	0.1	3.50	3.50	3.50
Punch hole pitch	P	0.1	4.00	4.00	4.00
Sprocket hole pitch	P0	0.1	4.00	4.00	4.00
Embossment center	P1	0.1	2.00	2.00	2.00
Overall tape thickness	T	0.1	0.23	0.23	0.23
Tape width	W	0.3	8.00	8.00	8.00
Reel width	W1	1.0	11.4	11.4	11.4

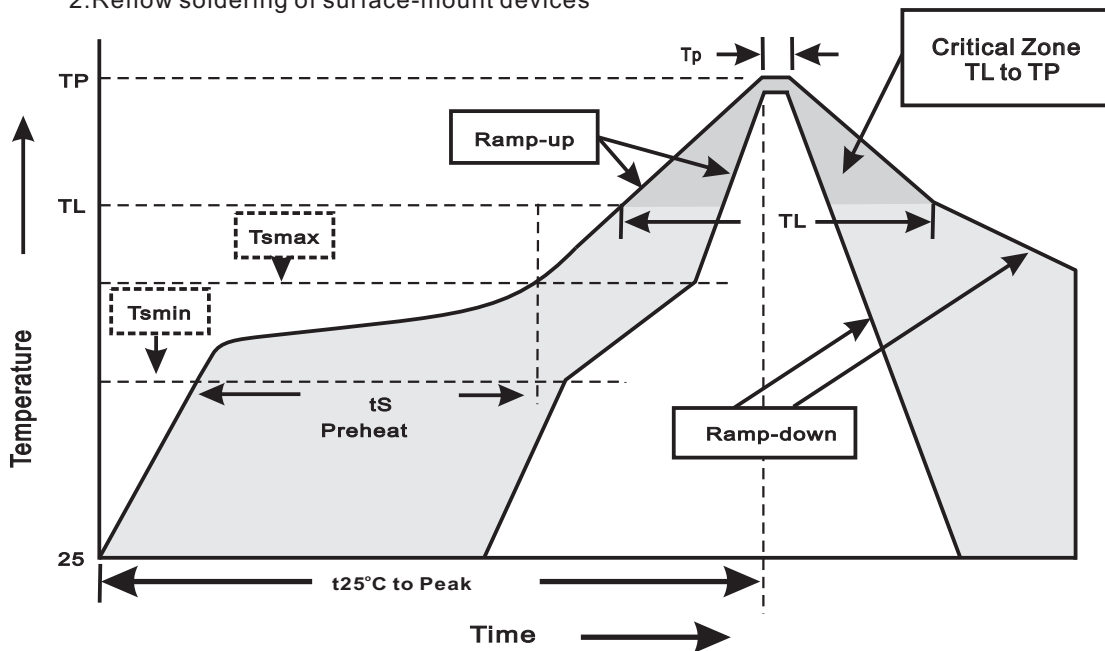
Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

DTC114YE / DTC114YUA / DTC114YCA / DTC114YSA**Reel packing**

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOT-523	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	11.6
SOT-323	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	9.5
SOT-23	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	11.6

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices

**3.Reflow soldering**

Profile Feature	Soldering Condition
Average ramp-up rate(T _L to T _P)	<3°C/sec
Preheat -Temperature Min(T _{smin}) -Temperature Max(T _{smax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smax} to T _L -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T _L) -Time(t _L)	217°C 60~260sec
Peak Temperature(T _P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t _P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes