DDTC (R2-ONLY SERIES) UA

NPN PRE-BIASED SMALL SIGNAL SOT-323 SURFACE MOUNT TRANSISTOR

Lead-free Green

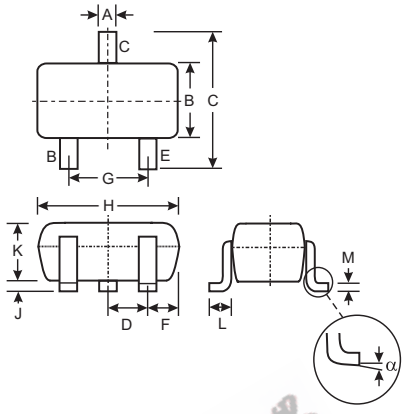
NEW PRODUCT

Features

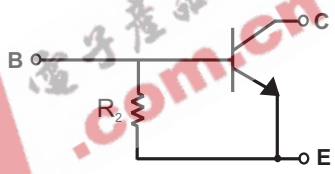
- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTA)
- Built-In Biasing Resistor, R2 only
- **Lead Free/RoHS Compliant (Note 2)**
- **"Green" Device (Note 3 and 4)**

Mechanical Data

- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 4. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Marking: Date Code and Type Code, See Page 2
- Ordering Information (See Page 2)
- Type Code: See Table Below
- Weight: 0.006 grams (approximate)



SOT-323		
Dim	**Min**	**Max**
A	0.25	0.40
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
E	0.30	0.40
G	1.20	1.40
H	1.80	2.20
J	0.0	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.18
α	0°	8°
All Dimensions in mm		



SCHEMATIC DIAGRAM

P/N	R2 (NOM)	Type Code
DDTC114GUA	10KΩ	N26
DDTC124GUA	22KΩ	N27
DDTC144GUA	47KΩ	N28
DDTC115GUA	100KΩ	N29

Maximum Ratings @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C (Max)	100	mA
Power Dissipation	P_d	200	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	$R_{\theta JA}$	625	°C/W
Operating and Storage and Temperature Range	T_j, T_{STG}	-55 to +150	°C

Note: 1. Mounted on FR4 PC Board with recommended pad layout at http://www.diodes.com/datasheets/ap02001.pdf.
2. No purposefully added lead.
3. Diodes Inc.'s "Green" Policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
4. Product manufactured with date code 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to date code 0627 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

NEW PRODUCT

Electrical Characteristics @ $T_A = 25°C$ unless otherwise specified

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		BV_{CBO}	50	—	—	V	$I_C = 50\mu A$
Collector-Emitter Breakdown Voltage		BV_{CEO}	50	—	—	V	$I_C = 1mA$
Emitter-Base Breakdown Voltage		BV_{EBO}	5	—	—	V	$I_E = 720\mu A$, DDTC114GUA $I_E = 330\mu A$, DDTC124GUA $I_E = 160\mu A$, DDTC144GUA $I_E = 72\mu A$, DDTC115GUA
Collector Cutoff Current		I_{CBO}	—	—	0.5	μA	$V_{CB} = 50V$
Emitter Cutoff Current	DDTC114GUA DDTC124GUA DDTC144GUA DDTC115GUA	I_{EBO}	300 140 65 30	—	580 260 130 58	μA	$V_{EB} = 4V$
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	—	—	0.3	V	$I_C = 10mA$, $I_B = 0.5mA$
DC Current Transfer Ratio	DDTC114GUA DDTC124GUA DDTC144GUA DDTC115GUA	h_{FE}	30 56 68 82	—	—	—	$I_C = 5mA$, $V_{CE} = 5V$
Bleeder Resistor (R_2) Tolerance		ΔR_2	-30	—	+30	%	—
Gain-Bandwidth Product*		f_T	—	250	—	MHz	$V_{CE} = 10V$, $I_E = -5mA$, $f = 100MHz$

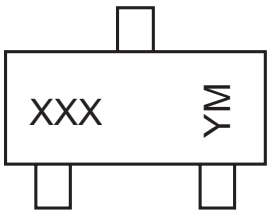
* Transistor - For Reference Only

Ordering Information (Note 4 & 5)

Device	Packaging	Shipping
DDTC114GUA-7-F	SOT-323	3000/Tape & Reel
DDTC124GUA-7-F	SOT-323	3000/Tape & Reel
DDTC144GUA-7-F	SOT-323	3000/Tape & Reel
DDTC115GUA-7-F	SOT-323	3000/Tape & Reel

Notes: 4. Product manufactured with date code 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to date code 0627 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.
5. For Packaging Details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



XXX = Product Type Marking Code, See Table on Page 1
YM = Date Code Marking
Y = Year ex: N = 2002
M = Month ex: 9 = September

Date Code Key

Year	2002	2003	2004	2005	2006	2007	2008	2009
Code	N	P	R	S	T	U	V	W

Month	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

NEW PRODUCT

TYPICAL CURVES - DDTC114GUA

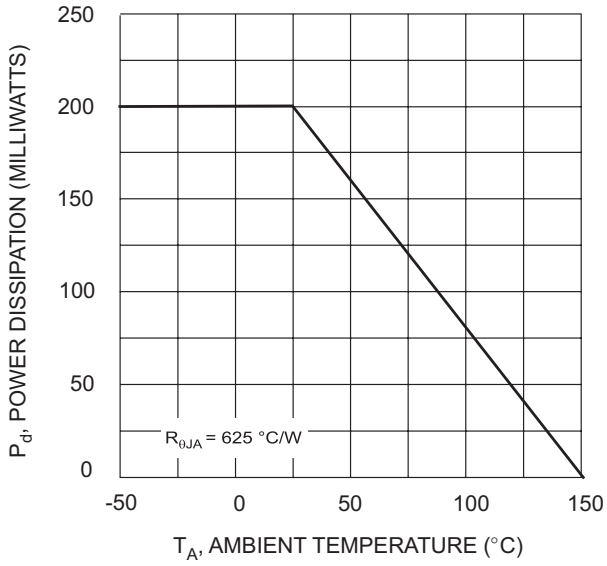


Fig. 1 Derating Curve

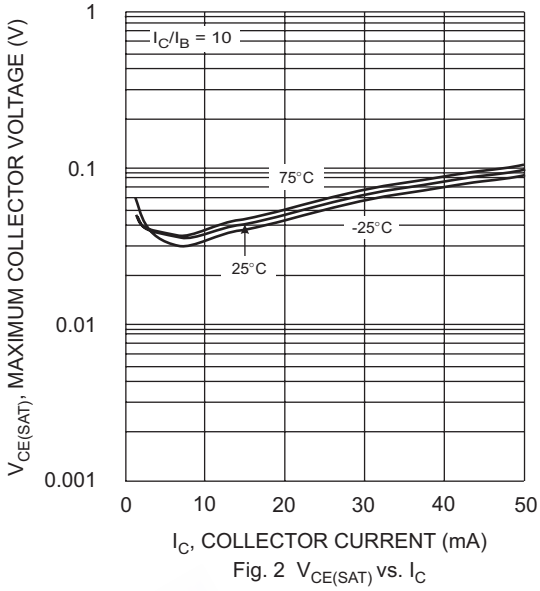


Fig. 2 $V_{CE(SAT)}$ vs. I_C

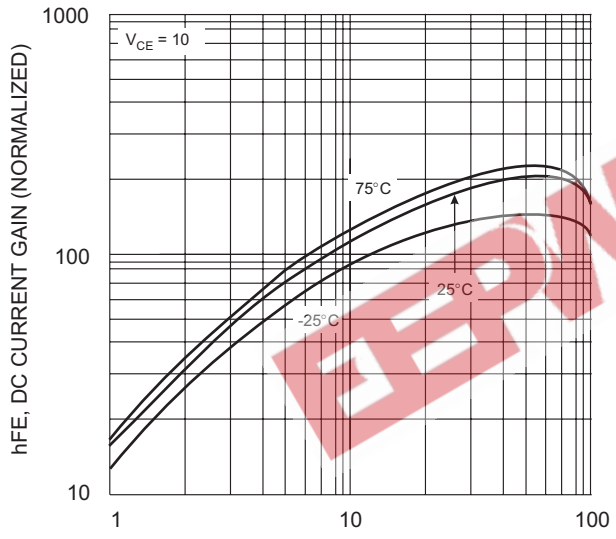


Fig. 3 DC CURRENT GAIN

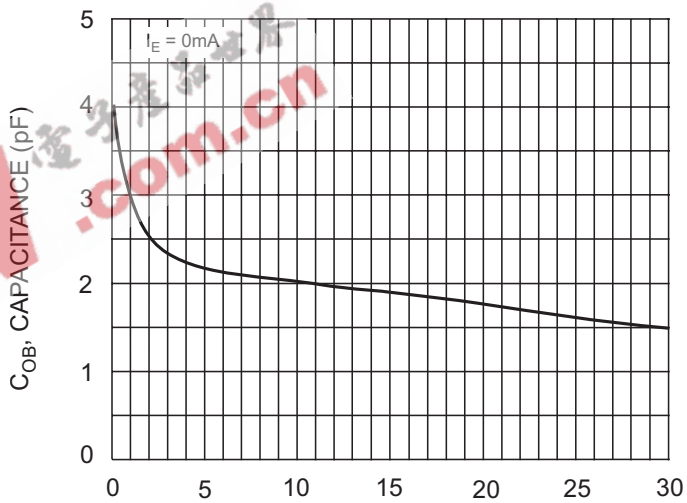


Fig. 4 Output Capacitance

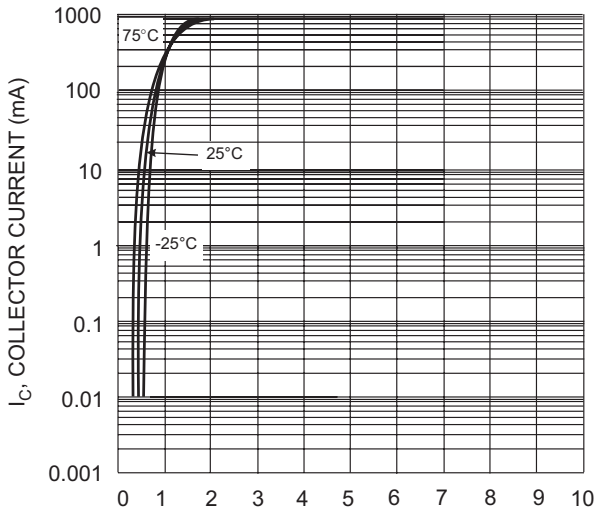


Fig. 5 Collector Current Vs. Input Voltage

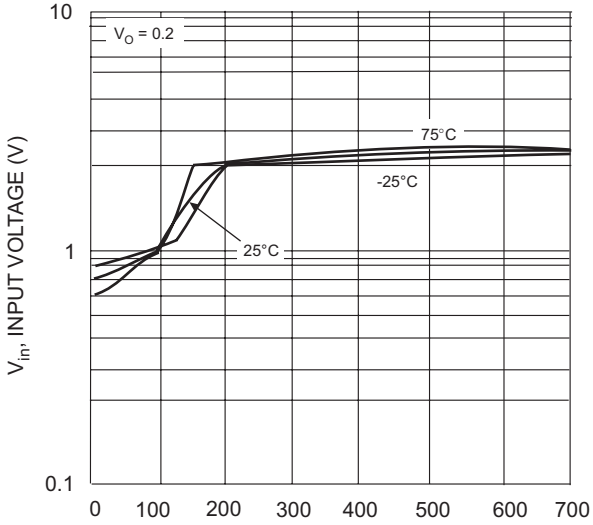


Fig. 6 Input Voltage vs. Collector Current

NEW PRODUCT

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