DDTC (R2-ONLY SERIES) E

NPN PRE-BIASED SMALL SIGNAL SURFACE MOUNT TRANSISTOR

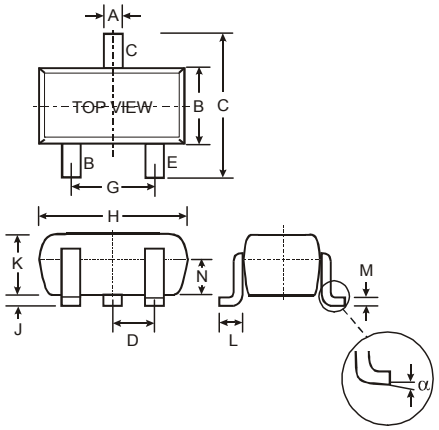
Features

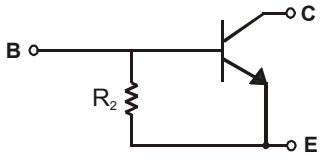
- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTA)
- Built-In Biasing Resistor, R2 only
- **Lead Free/RoHS Compliant (Note 2)**
- **"Green" Device (Note 3 and 4)**

Mechanical Data

- Case: SOT-523
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Terminal Connections: See Diagram
- Marking Information: See Table Below & Page 2
- Ordering Information: See Page 2
- Weight: 0.002 grams (approximate)

P/N	R1 (NOM)	Marking
DDTC114GE	10KΩ	N26
DDTC124GE	22KΩ	N27
DDTC144GE	47KΩ	N28
DDTC115GE	100KΩ	N29





SCHEMATIC DIAGRAM

SOT-523			
Dim	**Min**	**Max**	**Typ**
A	0.15	0.30	0.22
B	0.75	0.85	0.80
C	1.45	1.75	1.60
D	—	—	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
J	0.00	0.10	0.05
K	0.60	0.80	0.75
L	0.10	0.30	0.22
M	0.10	0.20	0.12
N	0.45	0.65	0.50
α	0°	8°	—
All Dimensions in mm			

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	150	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	$R_{\theta JA}$	833	°C/W
Operating and Storage and Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes:
1. Mounted on FR4 PC Board with recommended pad layout, which can be found on our website at http://www.diodes.com/datasheets/ap02001.
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 UO (week 40, 2007) and newer are built with Green Molding Compound. Product manufactured prior to Date Code UO are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

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 = 50μA
Collector-Emitter Breakdown Voltage		BV_{CEO}	50	—	—	V	I_C = 1mA
Emitter-Base Breakdown Voltage		BV_{EBO}	5	—	—	V	I_E = 720μA, DDTC114GE I_E = 330 μA, DDTC124GE I_E = 160 μA, DDTC144GE I_E = 72 μA, DDTC115GE
Collector Cutoff Current		I_{CBO}	—	—	0.5	μA	V_{CB} = 50V
Emitter Cutoff Current	DDTC114GE DDTC124GE DDTC144GE DDTC115GE	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	DDTC114GE DDTC124GE DDTC144GE DDTC115GE	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

TYPICAL CURVES – DDTC114GE

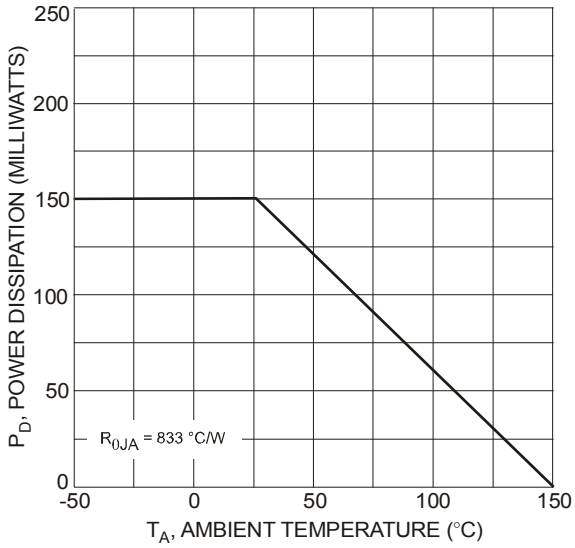


Fig. 1 Derating Curve

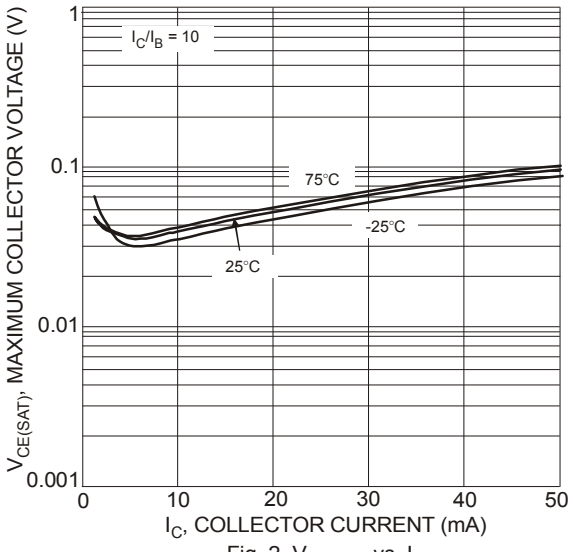


Fig. 2 $V_{CE(SAT)}$ vs. I_C

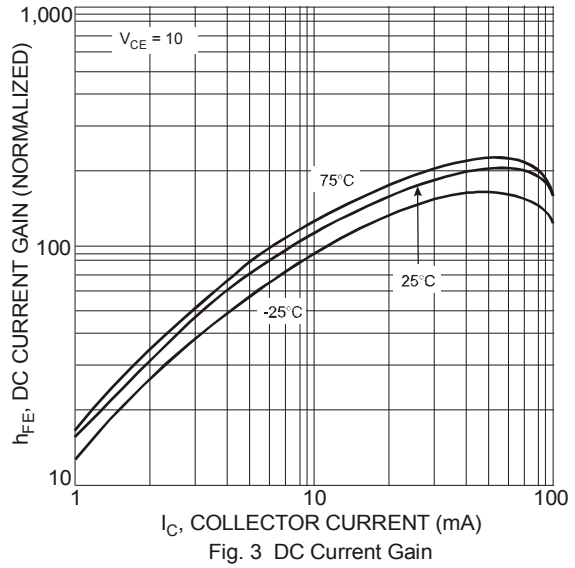


Fig. 3 DC Current Gain

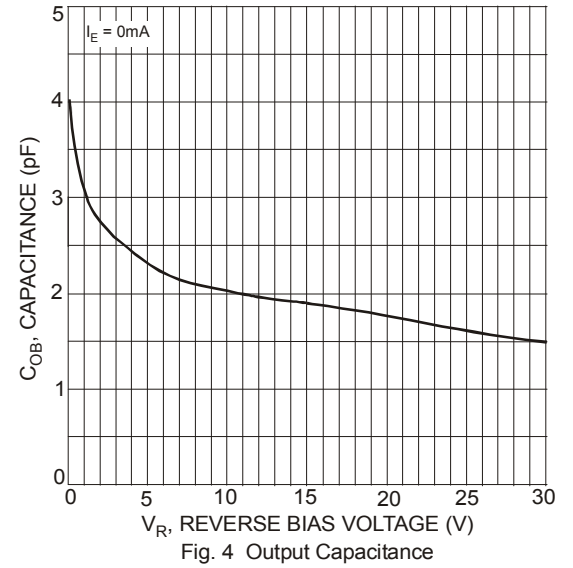


Fig. 4 Output Capacitance

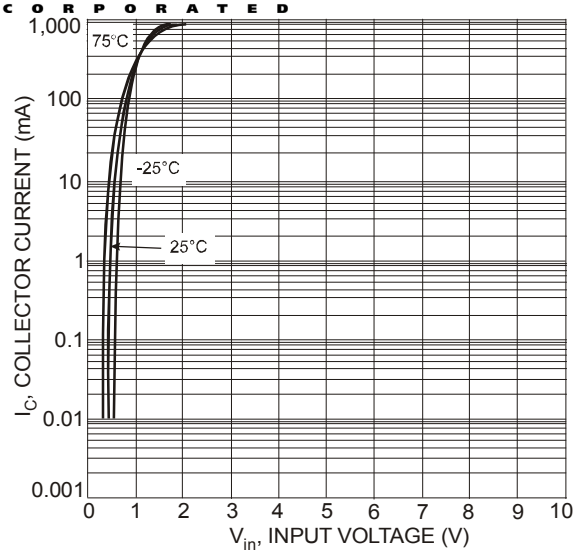


Fig. 5 Collector Current vs. Input Voltage

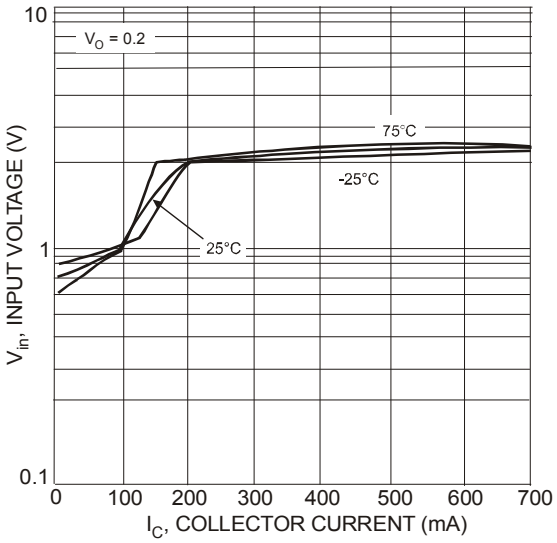


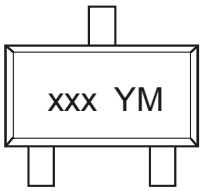
Fig. 6 Input Voltage vs. Collector Current

Ordering Information (Note 5)

Device	Packaging	Shipping
DDTC1xxGE-7-F	SOT-523	3000/Tape & Reel
DDTC1xxGE-13-F	SOT-523	10,000/Tape & Reel

Notes: 5. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



xxx = Product Type Marking Code (See Page 1, e.g. N26 = DDTC114GE)
YM = Date Code Marking
Y = Year (ex: T = 2006)
M = Month (ex: 9 = September)

Date Code Key

Year	2006	2007	2008	2009	2010	2011	2012
Code	T	U	V	W	X	Y	Z

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

Mouser Electronics

Authorized Distributor

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Diodes Incorporated:

DDTC114GE-7 DDTC115GE-7 DDTC124GE-7 DDTC144GE-7