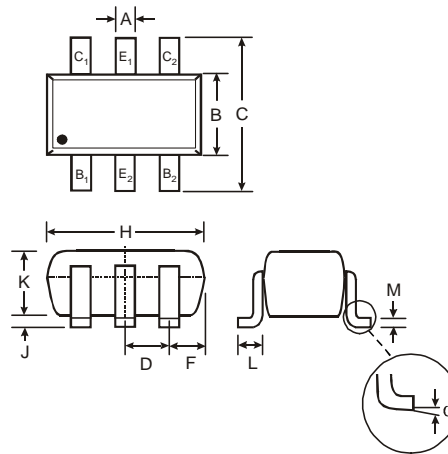


Features

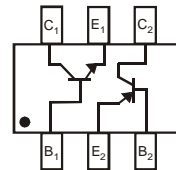
- Complementary Pair
- Epitaxial Planar Die Construction
- One 2222A Type (NPN),
One 2907A Type (PNP)
- Ideal for Low Power Amplification and Switching
- **Lead Free By Design/RoHS Compliant (Note 2)**
- **"Green Device" (Note 3)**

Mechanical Data

- Case: SOT-26
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish - Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Ordering & Date Code Information: See Page 6
- Marking Information: See Page 6
- Weight: 0.006 grams (approximate)



Note: E1, B1, and C1 = 2222A Type (NPN)
E2, B2, and C2 = 2907A Type (PNP)
Type marking indicates orientation



SOT-26			
Dim	Min	Max	Typ
A	0.35	0.50	0.38
B	1.50	1.70	1.60
C	2.70	3.00	2.80
D	-	-	0.95
F	-	-	0.55
H	2.90	3.10	3.00
J	0.013	0.10	0.05
K	1.00	1.30	1.10
L	0.35	0.55	0.40
M	0.10	0.20	0.15
α	0°	8°	-
All Dimensions in mm			

Maximum Ratings: 2222A Type (NPN) @T_A = 25°C unless otherwise specified

Characteristic	Symbol	2222A (NPN)	Unit
Collector-Base Voltage	V _{CB0}	75	V
Collector-Emitter Voltage	V _{CEO}	40	V
Emitter-Base Voltage	V _{EBO}	6.0	V
Collector Current - Continuous	I _C	600	mA

Maximum Ratings: 2907A Type (PNP) @T_A = 25°C unless otherwise specified

Characteristic	Symbol	2907A (PNP)	Unit
Collector-Base Voltage	V _{CB0}	-60	V
Collector-Emitter Voltage	V _{CEO}	-60	V
Emitter-Base Voltage	V _{EBO}	-5.0	V
Collector Current - Continuous	I _C	-600	mA

Maximum Ratings: Total @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 1)	P _D	300	mW
Thermal Resistance, Junction to Ambient (Note 1)	R _{θJA}	417	°C/W
Operating and Storage Temperature Range	T _j , T _{STG}	-55 to +150	°C

- Notes:
1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website 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.

NEW PRODUCT

Electrical Characteristics: 2222A Type (NPN) @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 4)						
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	75	—	V	$I_C = 10\mu\text{A}, I_E = 0$	
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40	—	V	$I_C = 10\text{mA}, I_B = 0$	
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6.0	—	V	$I_E = 10\mu\text{A}, I_C = 0$	
Collector Cutoff Current	I_{CBO}	—	10	nA	$V_{CB} = 60\text{V}, I_E = 0$	
Collector Cutoff Current	I_{CEX}	—	10	nA	$V_{CE} = 60\text{V}, V_{EB(OFF)} = 3.0\text{V}$	
Emitter Cutoff Current	I_{EBO}	—	10	nA	$V_{EB} = 3.0\text{V}, I_C = 0$	
Base Cutoff Current	I_{BL}	—	20	nA	$V_{CE} = 60\text{V}, V_{EB(OFF)} = 3.0\text{V}$	
ON CHARACTERISTICS (Note 4)						
DC Current Gain	h_{FE}	35	—	—	$I_C = 100\mu\text{A}, V_{CE} = 10\text{V}$	
		50	—			$I_C = 1.0\text{mA}, V_{CE} = 10\text{V}$
		75	—			$I_C = 10\text{mA}, V_{CE} = 10\text{V}$
		100	300			$I_C = 150\text{mA}, V_{CE} = 10\text{V}$
		40	—			$I_C = 500\text{mA}, V_{CE} = 10\text{V}$
		50	—			$I_C = 10\text{mA}, V_{CE} = 10\text{V}, T_A = -55^\circ\text{C}$
35	—	$I_C = 150\text{mA}, V_{CE} = 1.0\text{V}$				
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	0.3 1.0	V	$I_C = 150\text{mA}, I_B = 15\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$	
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	0.6	1.2 2.0	V	$I_C = 150\text{mA}, I_B = 15\text{mA}$ $I_C = 500\text{mA}, I_B = 50\text{mA}$	
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C_{obo}	—	8	pF	$V_{CB} = 10\text{V}, f = 1.0\text{MHz}, I_E = 0$	
Input Capacitance	C_{ibo}	—	25	pF	$V_{EB} = 0.5\text{V}, f = 1.0\text{MHz}, I_C = 0$	
Current Gain-Bandwidth Product	f_T	300	—	MHz	$V_{CE} = 20\text{V}, I_C = 20\text{mA}, f = 100\text{MHz}$	
SWITCHING CHARACTERISTICS						
Delay Time	t_d	—	10	ns	$V_{CC} = 30\text{V}, I_C = 150\text{mA}$	
Rise Time	t_r	—	25	ns	$V_{BE(off)} = -0.5\text{V}, I_{B1} = 15\text{mA}$	
Storage Time	t_s	—	225	ns	$V_{CC} = 30\text{V}, I_C = 150\text{mA}$	
Fall Time	t_f	—	60	ns	$I_{B1} = I_{B2} = 15\text{mA}$	

Notes: 4. Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

Electrical Characteristics: 2907A Type (PNP) @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 4)					
Collector-Base Breakdown Voltage	V _{(BR)CBO}	-60	—	V	I _C = -10μA, I _E = 0
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	-60	—	V	I _C = -10mA, I _B = 0
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	-5.0	—	V	I _E = -10μA, I _C = 0
Collector Cutoff Current	I _{CBO}	—	-10	nA μA	V _{CB} = -50V, I _E = 0 V _{CB} = -50V, I _E = 0, T _A = 125°C
Collector Cutoff Current	I _{CEX}	—	-50	nA	V _{CE} = -30V, V _{EB(OFF)} = -0.5V
Base Cutoff Current	I _{BL}	—	-50	nA	V _{CE} = -30V, V _{EB(OFF)} = -0.5V
ON CHARACTERISTICS (Note 4)					
DC Current Gain	h _{FE}	75 100 100 100 50	— — — 300 —	—	I _C = -100μA, V _{CE} = -10V I _C = -1.0mA, V _{CE} = -10V I _C = -10mA, V _{CE} = -10V I _C = -150mA, V _{CE} = -10V I _C = -500mA, V _{CE} = -10V
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	—	-0.4 -1.6	V	I _C = -150mA, I _B = -15mA I _C = -500mA, I _B = -50mA
Base-Emitter Saturation Voltage	V _{BE(SAT)}	—	-1.3 -2.6	V	I _C = 150mA, I _B = 15mA I _C = 500mA, I _B = 50mA
SMALL SIGNAL CHARACTERISTICS					
Output Capacitance	C _{obo}	—	8.0	pF	V _{CB} = -10V, f = 1.0MHz, I _E = 0
Input Capacitance	C _{ibo}	—	30	pF	V _{EB} = -2.0V, f = 1.0MHz, I _C = 0
Current Gain-Bandwidth Product	f _T	200	—	MHz	V _{CE} = -20V, I _C = -50mA, f = 100MHz
SWITCHING CHARACTERISTICS					
Turn-On Time	t _{on}	—	45	ns	V _{CC} = -30V, I _C = -150mA, I _{B1} = -15mA
Delay Time	t _d	—	10	ns	
Rise Time	t _r	—	40	ns	
Turn-Off Time	t _{off}	—	100	ns	V _{CC} = -6.0V, I _C = -150mA, I _{B1} = I _{B2} = -15mA
Storage Time	t _s	—	80	ns	
Fall Time	t _f	—	30	ns	

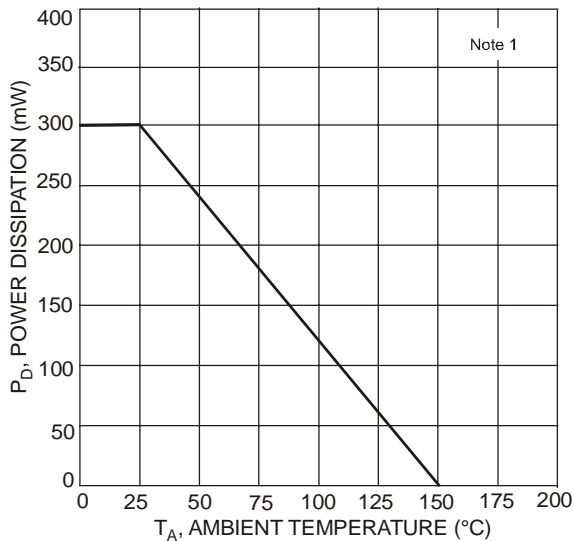


Fig. 1, Max Power Dissipation vs. Ambient Temperature

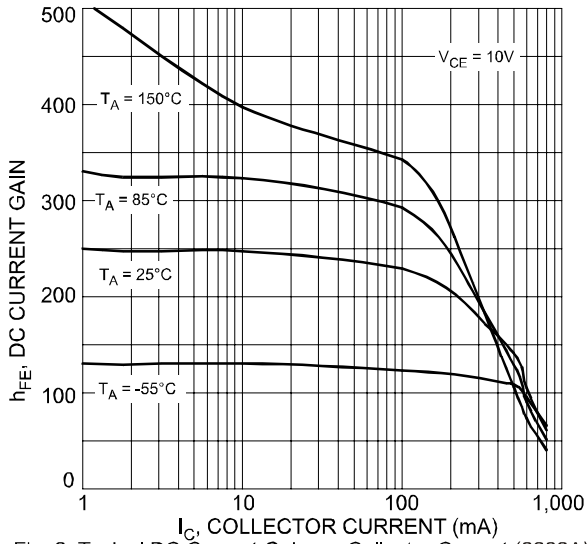


Fig. 2 Typical DC Current Gain vs. Collector Current (2222A)

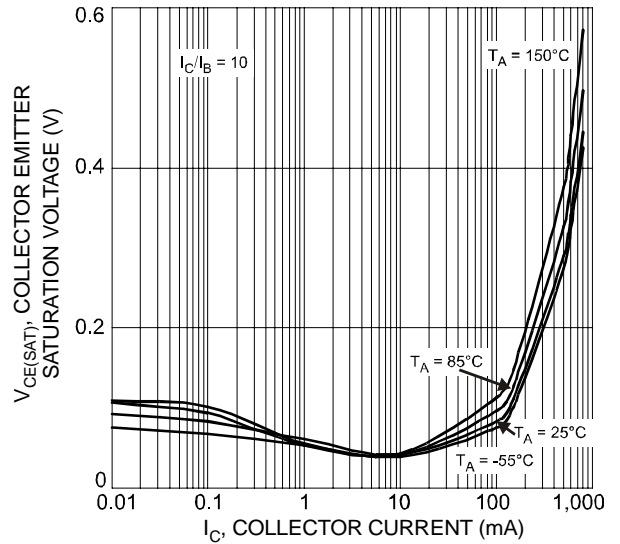


Fig. 3 Typical Collector Emitter Saturation Voltage vs. Collector Current (2222A)

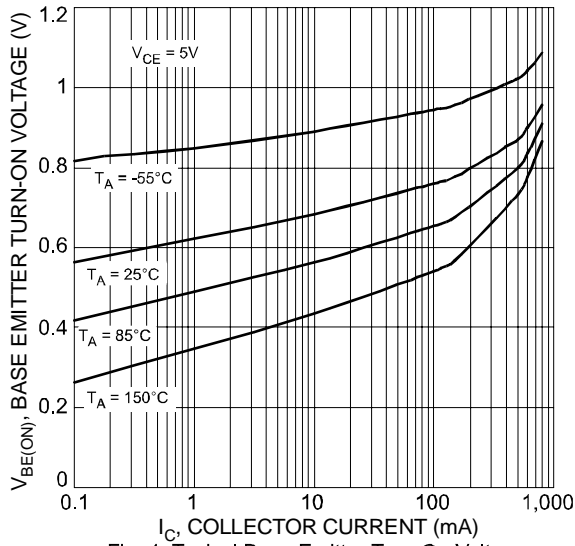


Fig. 4 Typical Base Emitter Turn-On Voltage vs. Collector Current (2222A)

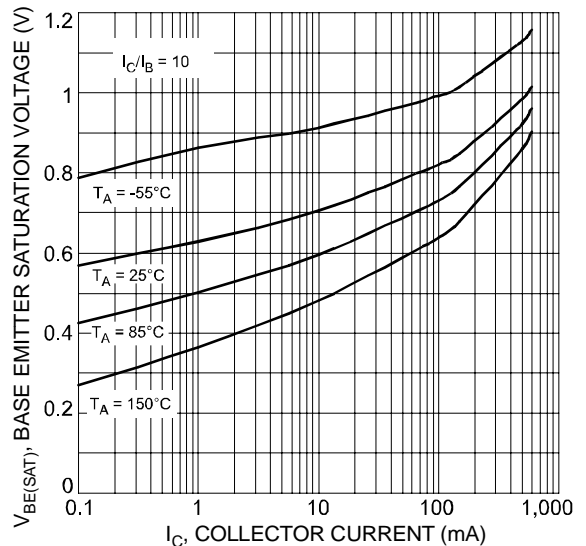


Fig. 5 Typical Base Emitter Saturation Voltage vs. Collector Current (2222A)

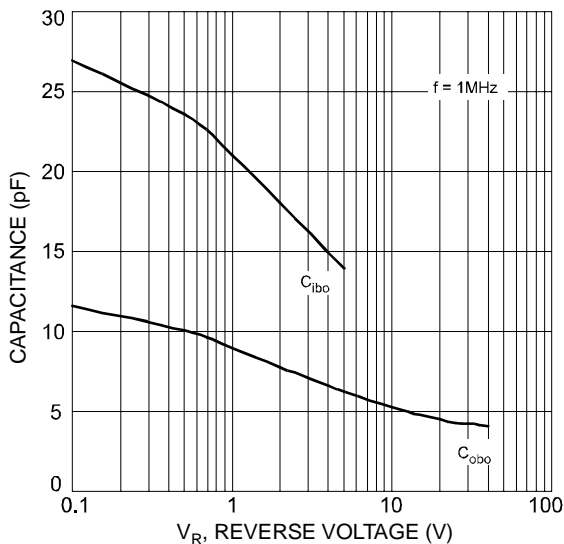


Fig. 6 Typical Capacitance Characteristics (2222A)

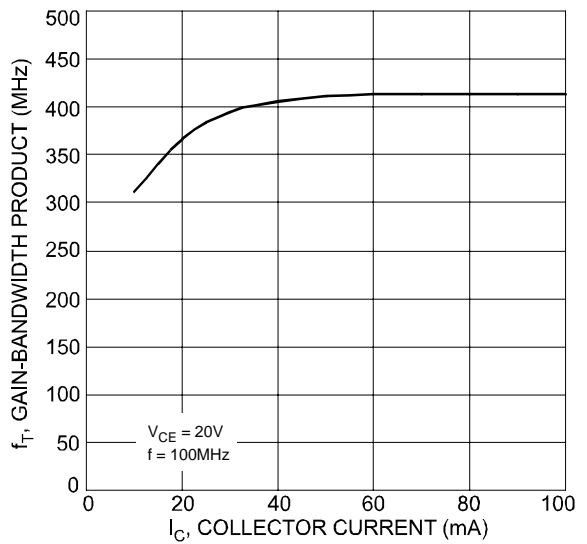


Fig. 7 Typical Gain-Bandwidth Product vs. Collector Current (2222A)

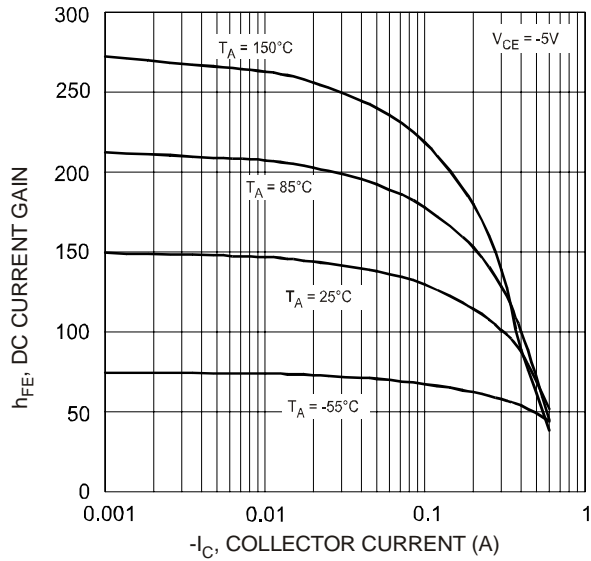


Fig. 8 Typical DC Current Gain vs. Collector Current (2907A)

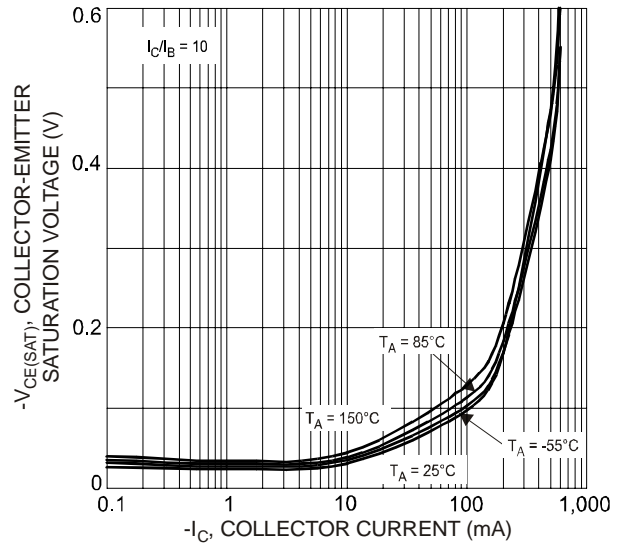


Fig. 9 Typical Collector-Emitter Saturation Voltage vs. Collector Current (2907A)

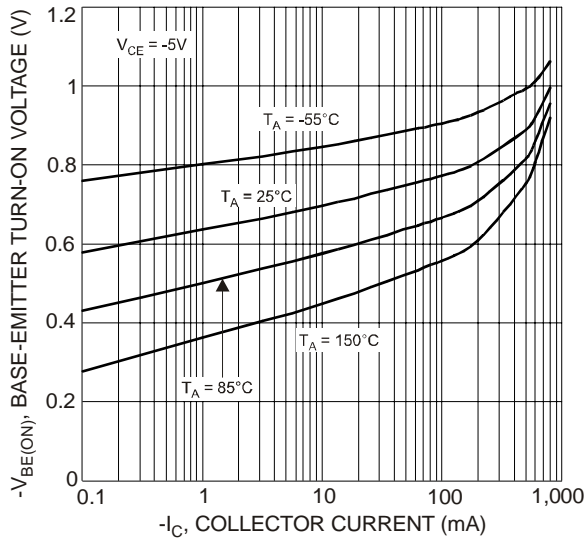


Fig. 10 Typical Base-Emitter Turn-On Voltage vs. Collector Current (2907A)

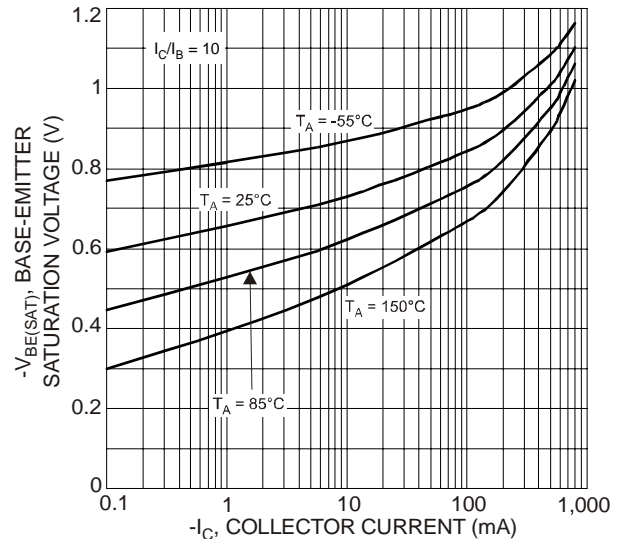


Fig. 11 Typical Base-Emitter Saturation Voltage vs. Collector Current (2907A)

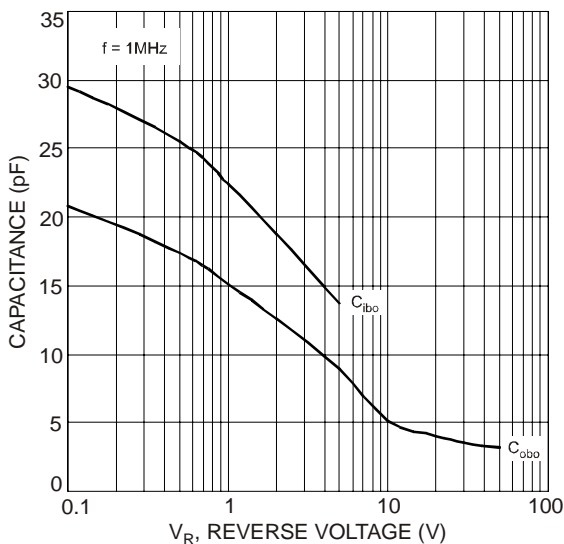


Fig. 12 Typical Capacitance Characteristics (2907A)

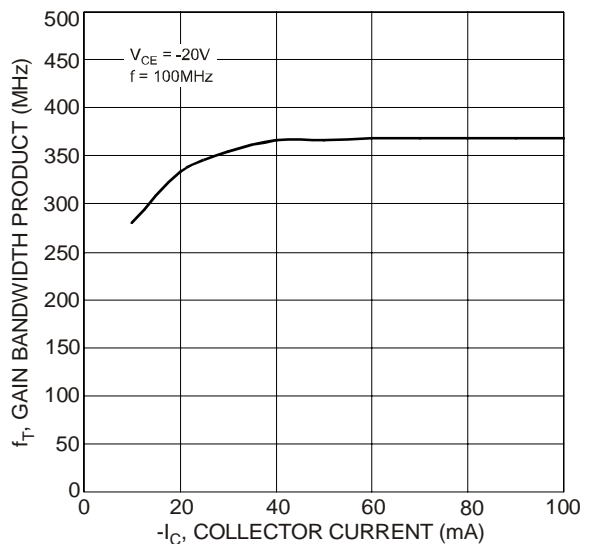


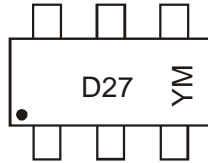
Fig. 13 Typical Gain-Bandwidth Product vs. Collector Current (2907A)

Ordering Information (Note 5)

Device	Packaging	Shipping
DMB2227A-7	SOT-26	3000/Tape & Reel

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

Marking Information



D27 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year ex: U = 2007
 M = Month ex: 9 = September

Date Code Key

Year	2007	2008	2009	2010	2011	2012
Code	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

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