

Electrical Characteristics, PNP Transistor, Q₁ @ T_A = 25°C unless otherwise specified

Characteristic (Note 4)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	V _{(BR)CBO}	-15	—	—	V	I _C = -10μA, I _E = 0
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	-12	—	—	V	I _C = -1.0mA, I _B = 0
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	-6	—	—	V	I _E = -10μA, I _C = 0
Collector Cutoff Current	I _{CBO}	—	—	-100	nA	V _{CB} = -15V, I _E = 0
Collector Cutoff Current	I _{EBO}	—	—	-100	nA	V _{EB} = -6V, I _C = 0
DC Current Gain	h _{FE}	270	—	680	—	V _{CE} = -2.0V, I _C = -10mA
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	—	-100	-250	mV	I _C = -200mA, I _B = -10mA
Gain-Bandwidth Product	f _T	—	280	—	MHz	V _{CE} = -2.0V, I _E = 10mA, f = 100MHz
Collector Output Capacitance	C _{obo}	—	5	—	pF	V _{CB} = -10V, I _E = 0, f = 1MHz

Electrical Characteristics, Pre-Biased NPN Transistor, Q₂ @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	V _{I(off)}	—	—	0.5	V	V _{CC} = 5V, I _O = 100μA
	V _{I(on)}	3	—	—	V	V _O = 0.3V, I _O = 10mA
Output Voltage	V _{O(on)}	—	0.1	0.3	V	I _O /I _I = 10mA/0.5 mA
Input Current	I _I	—	—	0.88	mA	V _I = 5V
Output Current	I _{O(off)}	—	—	0.5	μA	V _{CC} = 50V, V _I = 0V
DC Current Gain	G _I	30	—	—	—	V _O = 5V, I _O = 5mA
Gain-Bandwidth Product (Note 5)	f _T	—	250	—	MHz	V _{CE} = 10V, I _E = -5mA, f = 100MHz
Input Resistance	R _I	7	10	13	kΩ	—
Resistance Ratio	R ₂ /R ₁	0.8	1	1.2	—	—

- Notes:
4. Short duration pulse test used to minimize self-heating effect.
 5. Characteristics of the transistor. For reference only.

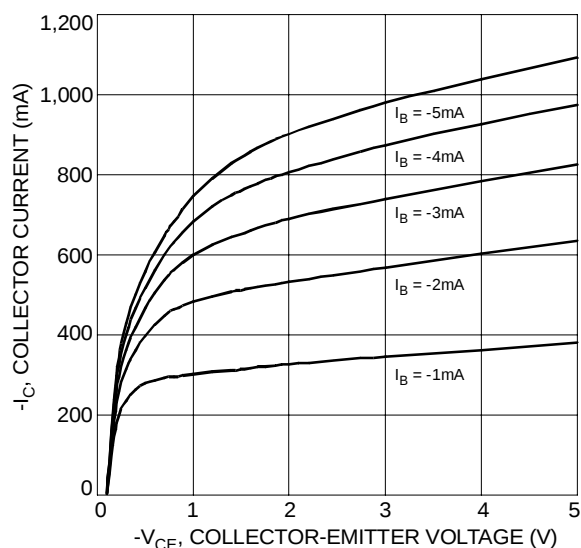


Fig. 1 Typical Collector Current vs. Collector-Emitter Voltage (Q1, PNP)

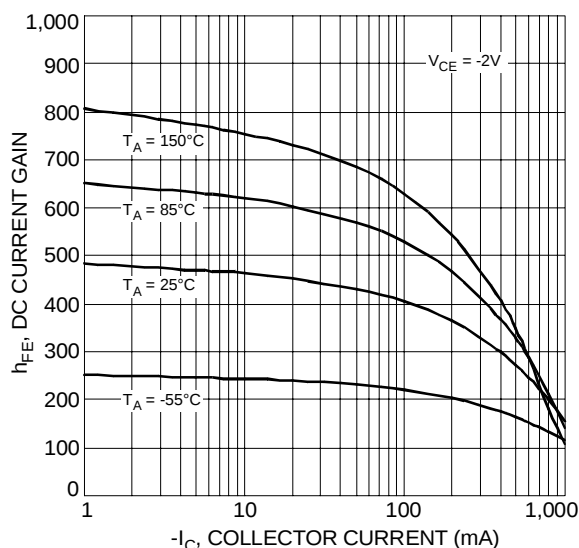


Fig. 2 Typical DC Current Gain vs. Collector Current (Q1, PNP)

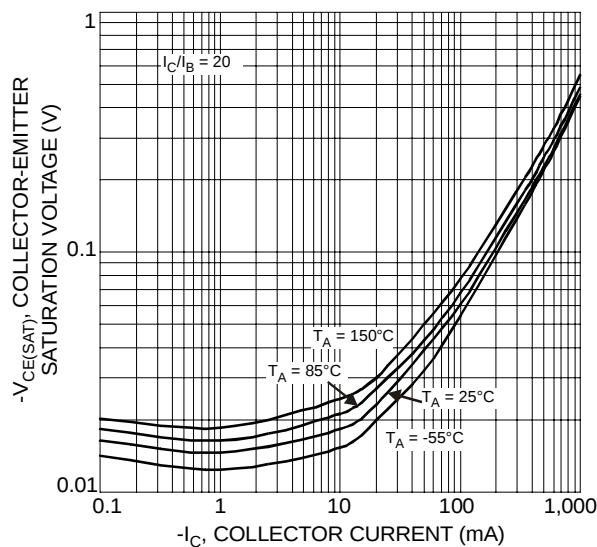


Fig. 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current (Q1, PNP)

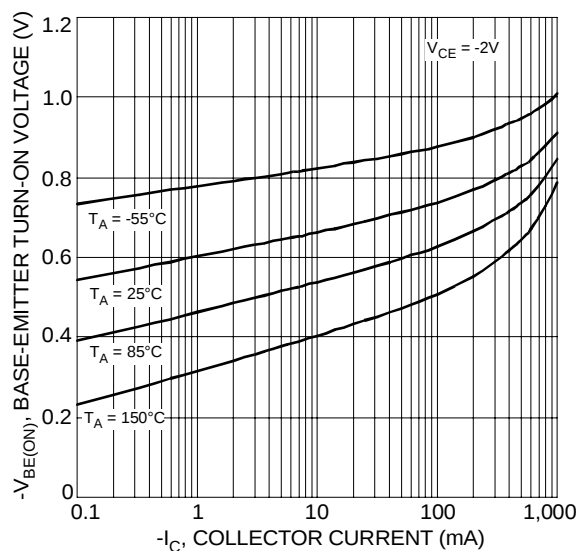


Fig. 4 Typical Base-Emitter Turn-On Voltage vs. Collector Current (Q1, PNP)

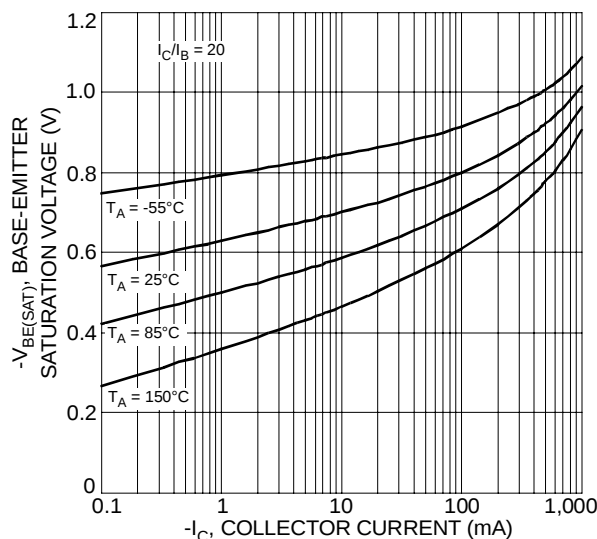


Fig. 5 Typical Base-Emitter Saturation Voltage vs. Collector Current (Q1, PNP)

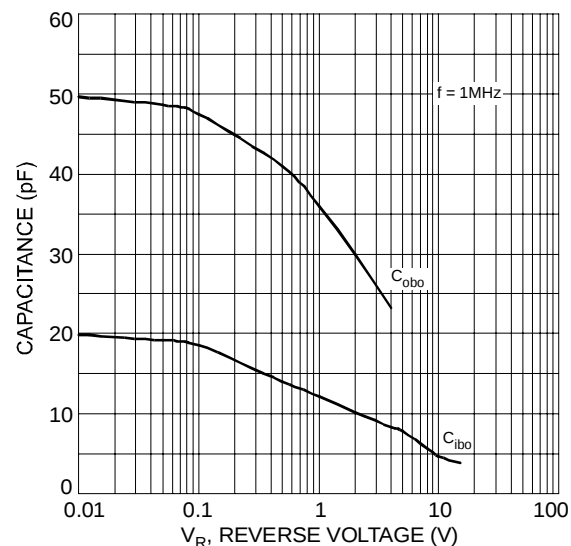


Fig. 6 Typical Capacitance Characteristics (Q1, PNP)

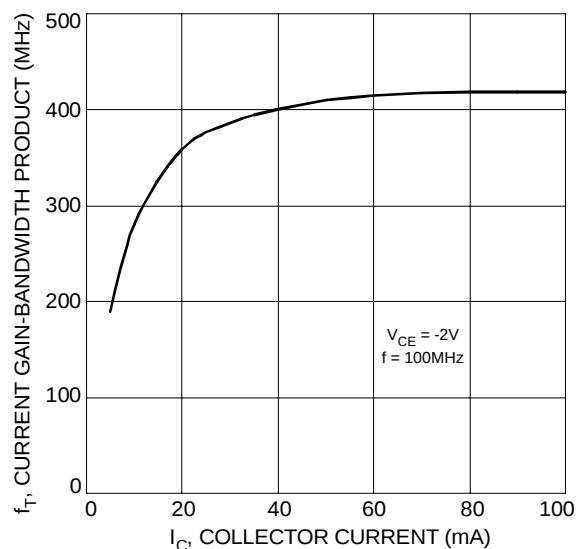


Fig. 7 Typical Gain-Bandwidth Product vs. Emitter Current (Q1, PNP)

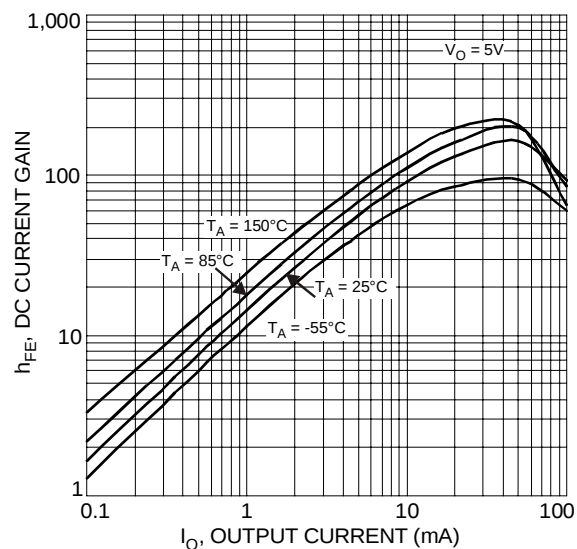


Fig. 8 Typical DC Current Gain vs. Output Current (Q2, NPN PBT)

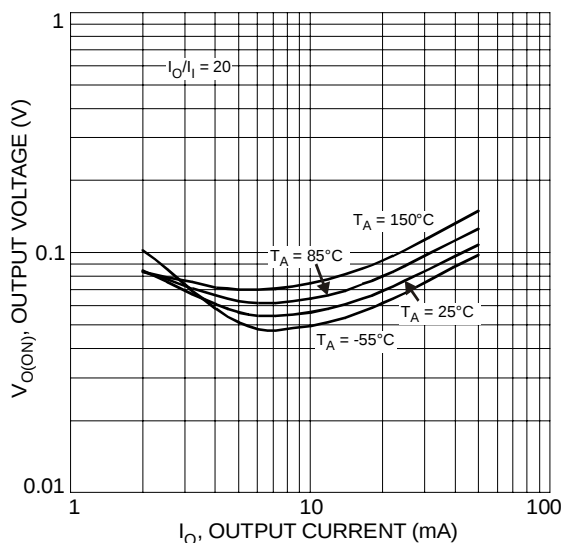


Fig. 9 Typical Output Voltage vs. Output Current (Q2, NPN PBT)

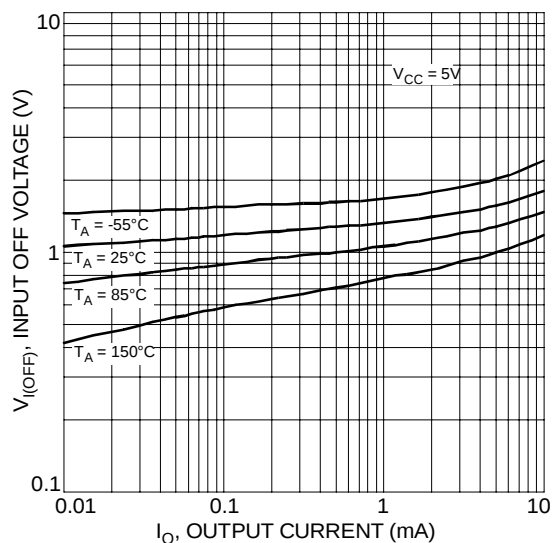


Fig. 10 Typical Input Off Voltage vs. Output Current (Q2, NPN PBT)

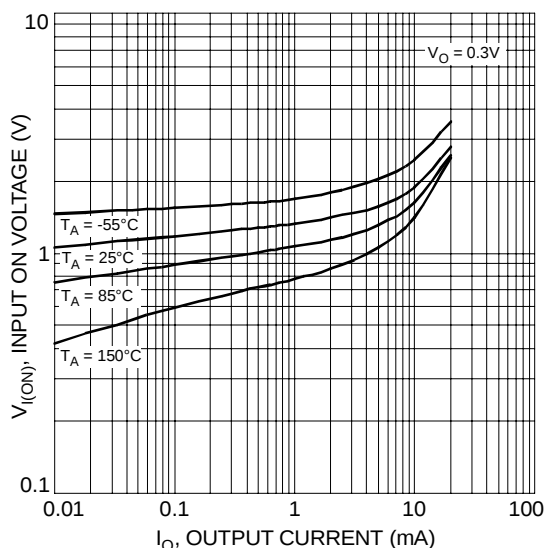


Fig. 11 Typical Input On Voltage vs. Output Current (Q2, NPN PBT)

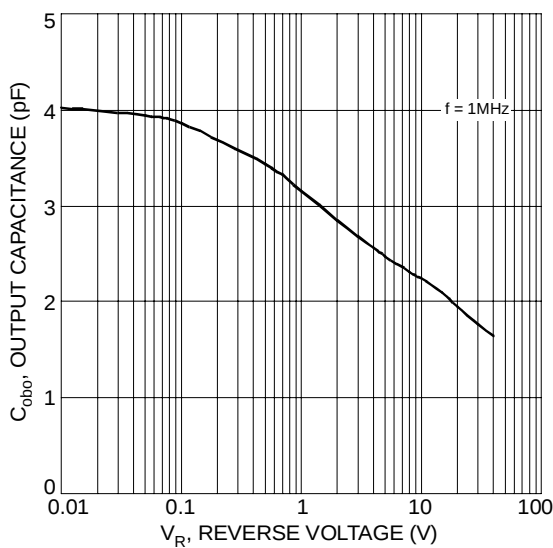


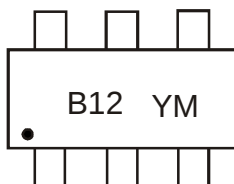
Fig. 12 Typical Output Capacitance Characteristics (Q2, NPN PBT)

Ordering Information (Note 6)

Device	Packaging	Shipping
EMF21-7	SOT-563	3000/Tape & Reel

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



B12 = Product Type Marking Code
YM = Date Code Marking
Y = Year ex: U = 2007
M = Month ex: 9 = September

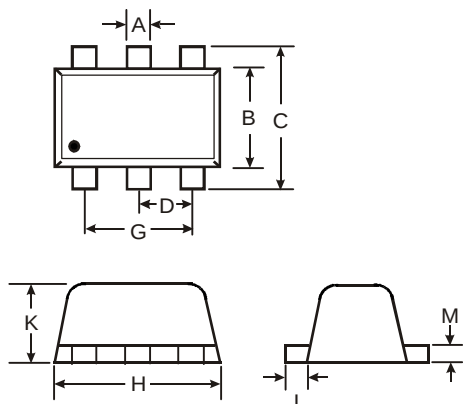
Date Code Key

State Country

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

Package Outline Dimensions



SOT-563			
Dim	Min	Max	Typ
A	0.15	0.30	0.25
B	1.10	1.25	1.20
C	1.55	1.70	1.60
D	0.50	-	-
G	0.90	1.10	1.00
H	1.50	1.70	1.60
K	0.56	0.60	0.60
L	0.10	0.30	0.20
M	0.10	0.18	0.11
All Dimensions in mm			

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