

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 4)</b>						
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	-180	-230	—	V	I <sub>C</sub> = -100μA, I <sub>E</sub> = 0
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	-140	-190	—	V	I <sub>C</sub> = -10mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	-7	-8.5	—	V	I <sub>E</sub> = -100μA, I <sub>C</sub> = 0
Collector Cutoff Current	I <sub>CBO</sub>	—	—	-20 -0.5	nA μA	V <sub>CB</sub> = -150V, I <sub>E</sub> = 0 V <sub>CB</sub> = -150V, I <sub>E</sub> = 0, T <sub>A</sub> = 100°C
Emitter Cutoff Current	I <sub>EBO</sub>	—	—	-10	nA	V <sub>EB</sub> = -6V, I <sub>C</sub> = 0
<b>ON CHARACTERISTICS (Note 4)</b>						
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	— — — —	-40 -50 -75 -175	-60 -80 -120 -360	mV	I <sub>C</sub> = -0.1A, I <sub>B</sub> = -5mA I <sub>C</sub> = -0.5A, I <sub>B</sub> = -50mA I <sub>C</sub> = -1A, I <sub>B</sub> = -100mA I <sub>C</sub> = -3A, I <sub>B</sub> = -300mA
Base-Emitter Saturation Voltage	V <sub>BE(SAT)</sub>	—	-910	-1040	mV	I <sub>C</sub> = -3A, I <sub>B</sub> = -300mA
Base-Emitter Turn-On Voltage	V <sub>BE(ON)</sub>	—	-810	-930	mV	I <sub>C</sub> = -3A, V <sub>CE</sub> = -5V
DC Current Gain	h <sub>FE</sub>	100 100 45 —	— — — 12	— 300 — —	—	I <sub>C</sub> = -10mA, V <sub>CE</sub> = -5V I <sub>C</sub> = -1A, V <sub>CE</sub> = -5V I <sub>C</sub> = -3A, V <sub>CE</sub> = -5V I <sub>C</sub> = -10A, V <sub>CE</sub> = -5V
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Current Gain-Bandwidth Product	f <sub>T</sub>	—	150	—	MHz	I <sub>C</sub> = -100mA, V <sub>CE</sub> = -10V, f = 100MHz
Output Capacitance	C <sub>obo</sub>	—	55	—	pF	V <sub>CB</sub> = -10V, f = 1MHz
<b>SWITCHING CHARACTERISTICS</b>						
Switching Times	t <sub>on</sub> t <sub>off</sub>	— —	85 430	— —	ns	I <sub>C</sub> = -1A, I <sub>B1</sub> = -100mA I <sub>B2</sub> = 100mA, V <sub>CC</sub> = -50V

Notes: 4. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤2%

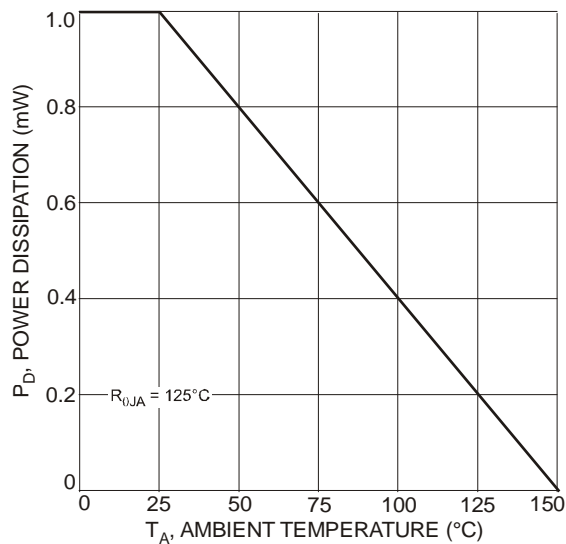


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

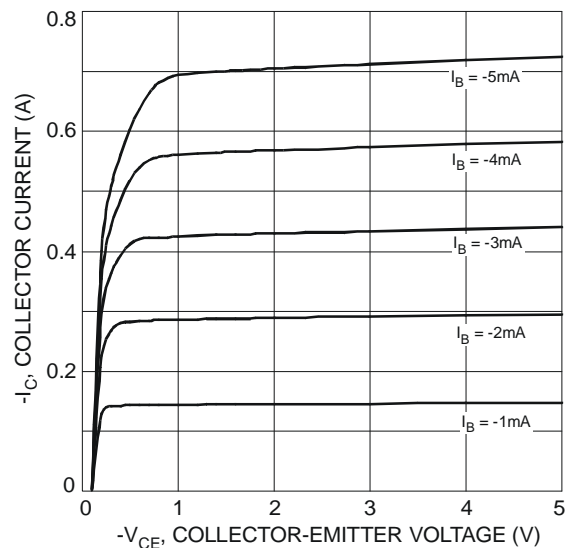


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

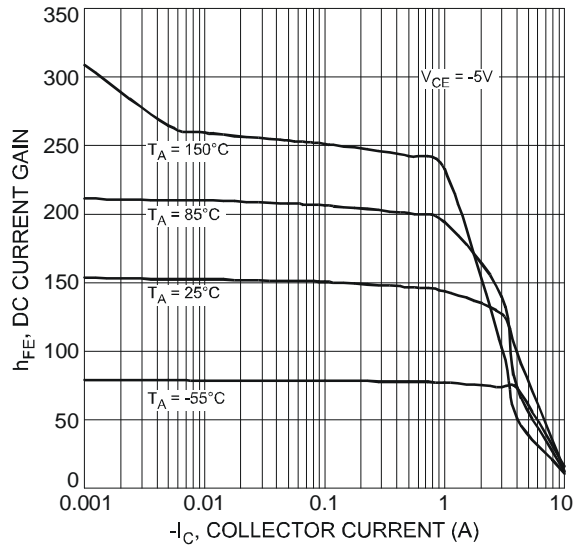


Fig. 3 Typical DC Current Gain vs. Collector Current

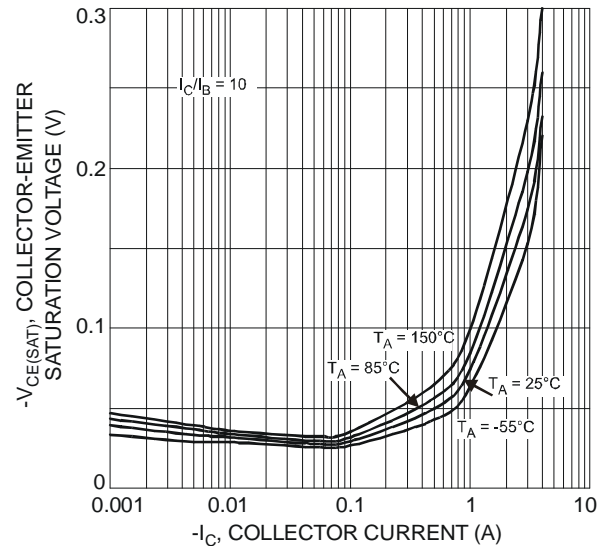


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

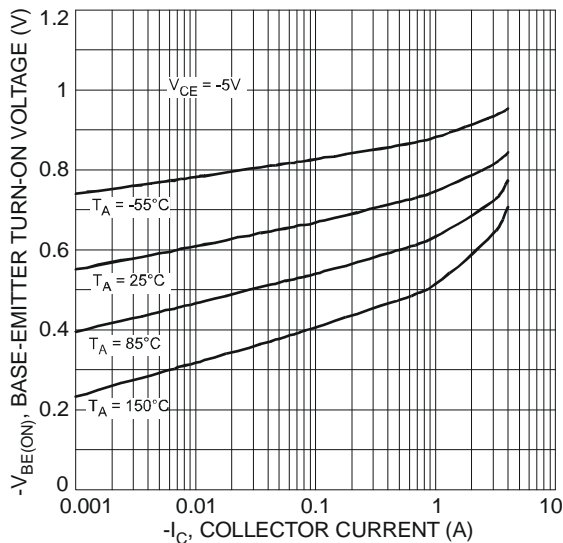


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

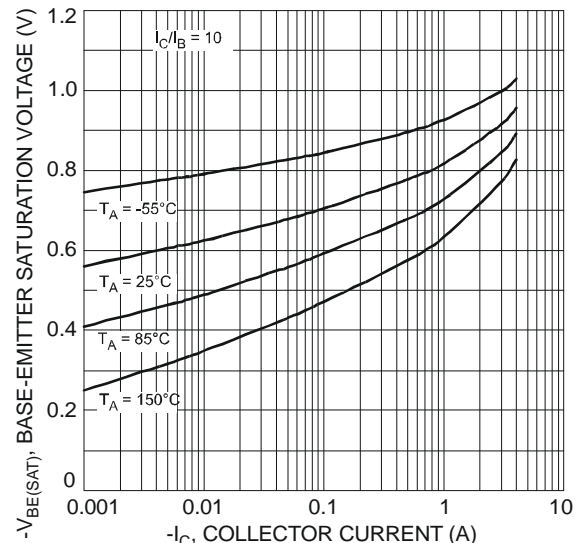


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

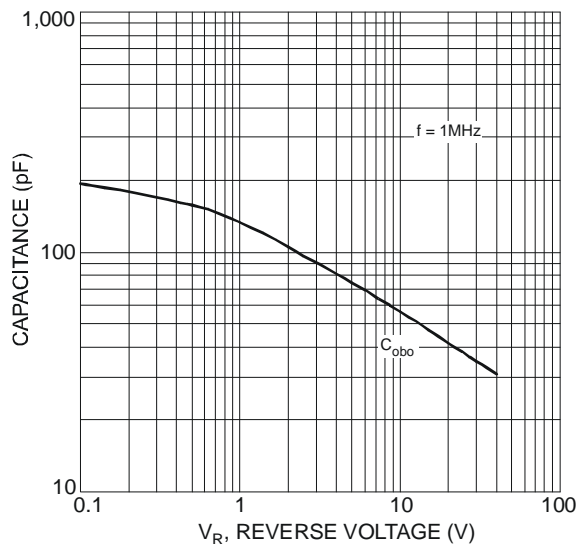


Fig. 7 Typical Capacitance Characteristics

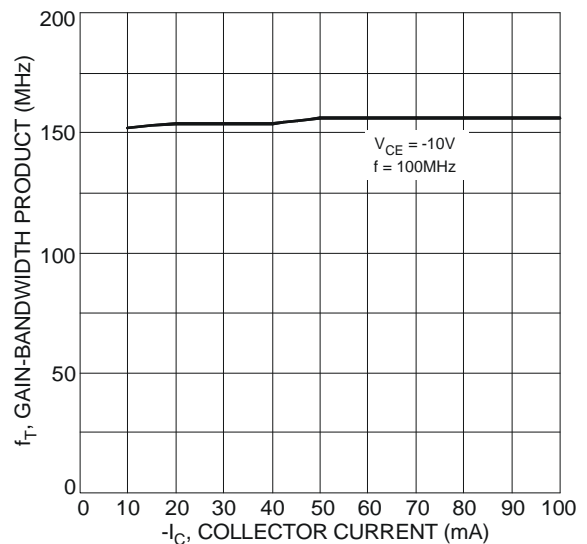


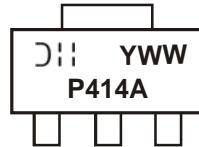
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

## Ordering Information (Note 5)

Part Number	Case	Packaging
DPLS4140E-13	SOT-223	2500/Tape & Reel

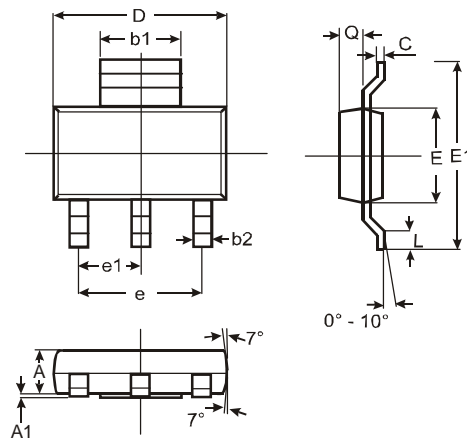
Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



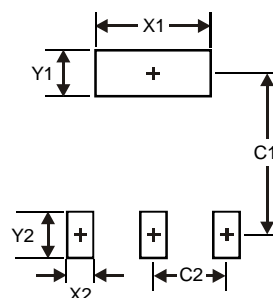
P414A = Product Type Marking Code  
 YWW = Date Code Marking  
 Y = Last digit of year (ex: 8 = 2008)  
 WW = Week code 01 - 52

## Package Outline Dimensions



SOT-223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b1	2.90	3.10	3.00
b2	0.60	0.80	0.70
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	—	—	4.60
e1	—	—	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

## Suggested Pad Layout



Dimensions	Value (in mm)
X1	3.3
X2	1.2
Y1	1.6
Y2	1.6
C1	6.4
C2	2.3

### IMPORTANT NOTICE

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