



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

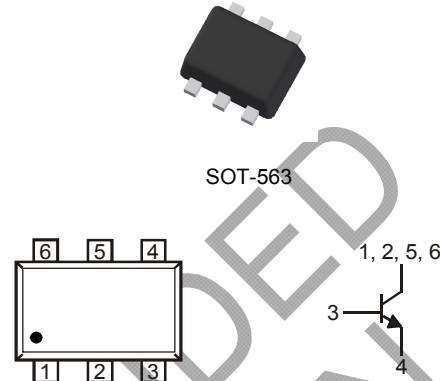


Features

- Epitaxial Planar Die Construction
- Complementary PNP Type Available (DPLS160V)
- Surface Mount Package Suited for Automated Assembly
- Ultra-Small Surface Mount Package
- **Lead Free/RoHS Compliant (Note 1)**
- **"Green Device" (Note 2)**
- **Qualified to AEC-Q 101 Standards for High Reliability**

Mechanical Data

- Case: SOT-563
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.003 grams (approximate)



Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	80	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current - Continuous	I_C	1	A
Peak Pulse Collector Current	I_{CM}	2	A
Base Current (DC)	I_B	300	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3) @ $T_A = 25^\circ\text{C}$	P_D	300	mW
Thermal Resistance, Junction to Ambient (Note 3) @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	417	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

- Notes:
1. No purposefully added lead.
 2. Diode's Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 3. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on page 4 or in Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 4)						
Collector-Base Breakdown Voltage	V _{(BR)CBO}	80	—	—	V	I _C = 100μA, 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	—	—	V	I _E = 100μA, I _C = 0
Collector Cutoff Current	I _{CBO}	—	—	100 50	nA μA	V _{CB} = 60V, I _E = 0 V _{CB} = 60V, I _E = 0, T _A = 150°C
Collector Cutoff Current	I _{CES}	—	—	100	nA	V _{CE} = 60V, V _{BE} = 0
Emitter Cutoff Current	I _{EBO}	—	—	100	nA	V _{EB} = 5V, I _C = 0
ON CHARACTERISTICS (Note 4)						
DC Current Gain	h _{FE}	250 200 100	320 280 165	—	V	V _{CE} = 5V, I _C = 1mA V _{CE} = 5V, I _C = 500mA V _{CE} = 5V, I _C = 1A
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	—	80 80 140	110 140 250	mV	I _C = 100mA, I _B = 1mA I _C = 500mA, I _B = 50mA I _C = 1A, I _B = 100mA
Collector-Emitter Saturation Resistance	R _{CE(SAT)}	—	140	250	mΩ	I _C = 1A, I _B = 100mA
Base-Emitter Saturation Voltage	V _{BE(SAT)}	—	0.91	1.1	V	I _C = 1A, I _B = 50mA
Base-Emitter Turn On Voltage	V _{BE(ON)}	—	0.81	0.9	V	V _{CE} = 5V, I _C = 1A
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C _{obo}	—	7	10	pF	V _{CB} = 10V, f = 1.0MHz
Current Gain-Bandwidth Product	f _T	150	270	—	MHz	V _{CE} = 10V, I _C = 50mA, f = 100MHz
SWITCHING CHARACTERISTICS						
Turn-On Time	t _{on}	—	90	—	ns	V _{CC} = 10V I _C = 0.5A, I _{B1} = I _{B2} = 25mA
Delay Time	t _d	—	17	—	ns	
Rise Time	t _r	—	73	—	ns	
Turn-Off Time	t _{off}	—	300	—	ns	
Storage Time	t _s	—	220	—	ns	
Fall Time	t _f	—	80	—	ns	

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

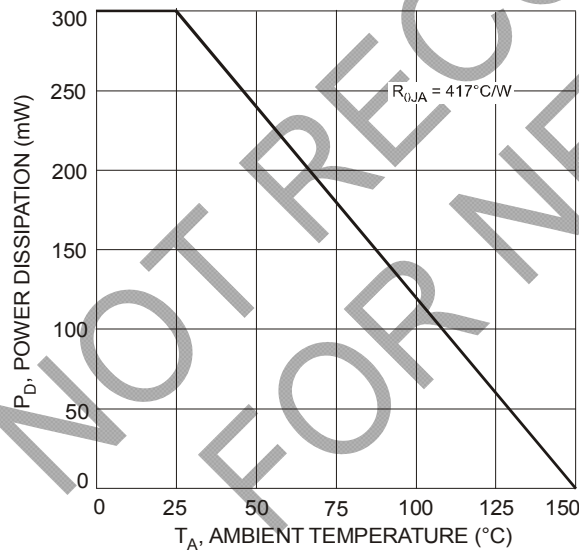


Fig. 1 Maximum Power Dissipation vs. Ambient Temperature

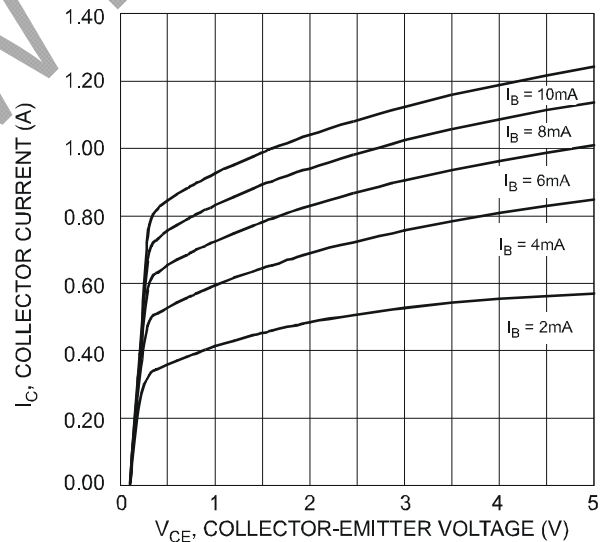


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

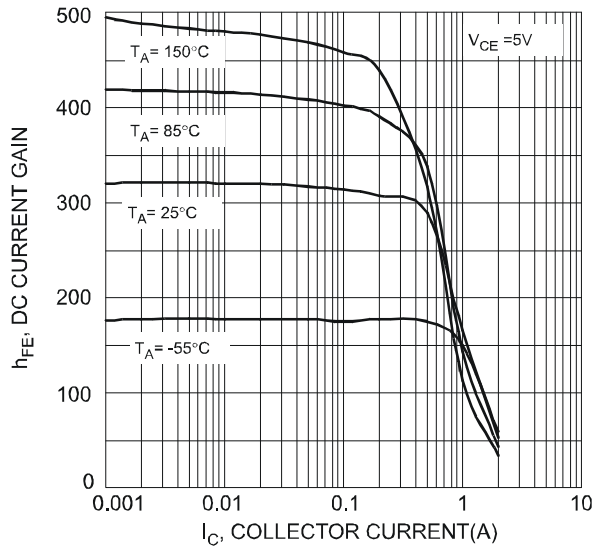


Fig. 3 Typical DC Current Gain vs. Collector Current

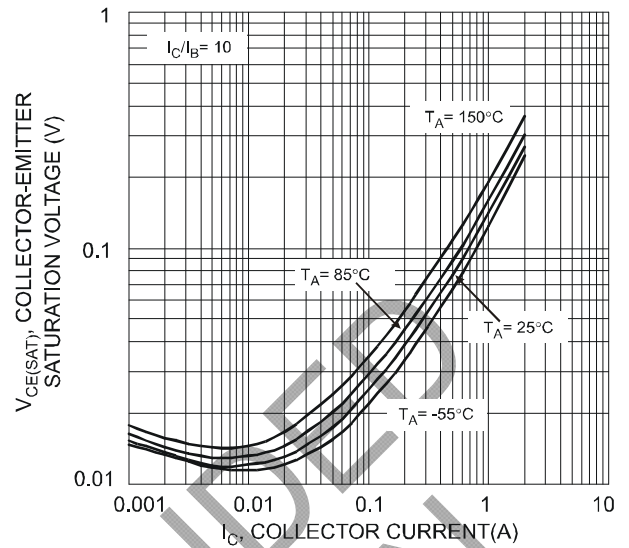


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

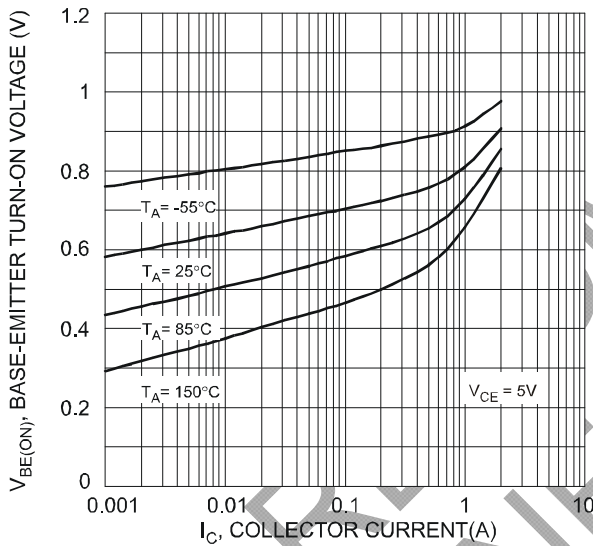


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

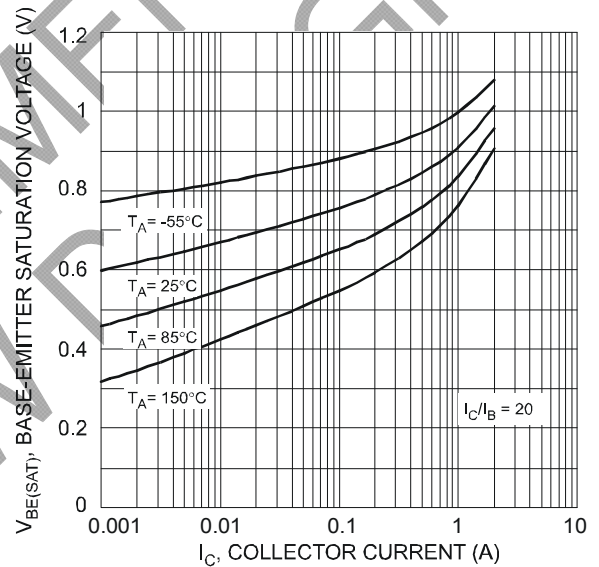


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

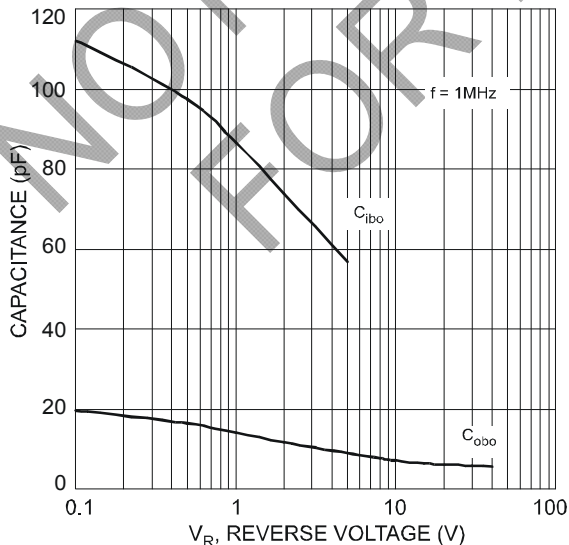


Fig. 7 Typical Capacitance Characteristics

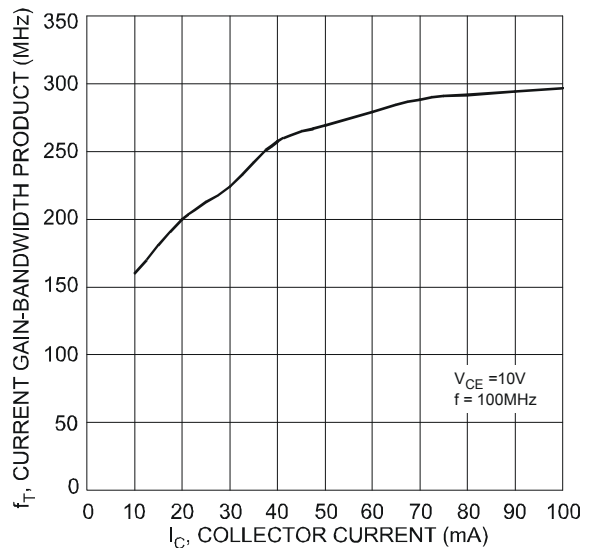


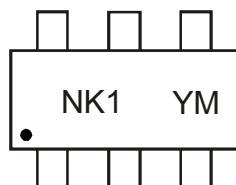
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

Ordering Information (Note 5)

Device	Packaging	Shipping
DNLS160V-7	SOT-563	3000/Tape & Reel

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

Marking Information



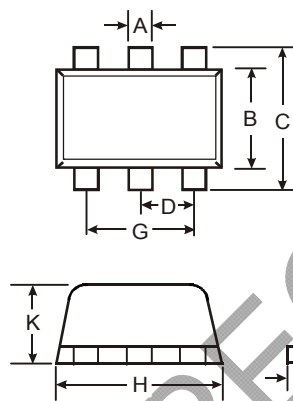
NK1 = Product Type Marking Code
YM = Date Code Marking
Y = Year ex: V = 2008
M = Month ex: 9 = September

Date Code Key

Year	2008	2009	2010	2011	2012	2013	2014	2015
Code	V	W	X	Y	Z	A	B	C

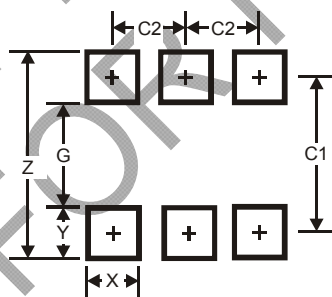
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Package Outline Dimensions



SOT-563			
Dim	Min	Max	Typ
A	0.15	0.30	0.20
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	0.55	0.60	0.60
L	0.10	0.30	0.20
M	0.10	0.18	0.11
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.2
G	1.2
X	0.375
Y	0.5
C1	1.7
C2	0.5

IMPORTANT NOTICE

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