



SOT-23

Schematic and Pin Configuration

E

Features

- Epitaxial Planar Die Construction
- Complementary PNP Type Available (DPLS160)
- Surface Mount Package Suited for Automated Assembly
- Lead Free/RoHS Compliant (Note 1)
- "Green Device" (Note 2)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

- Case: SOT-23
- 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: 0.008 grams (approximate)

Maximum Ratings @T_A = 25°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	Ic	1	А
Peak Pulse Collector Current	I _{CM}	2	А
Base Current (DC)	IB	300	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3) @ $T_A = 25^{\circ}C$	PD	300	mW
Thermal Resistance, Junction to Ambient (Note 3) @ $T_A = 25^{\circ}C$	R _{0JA}	417	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°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.

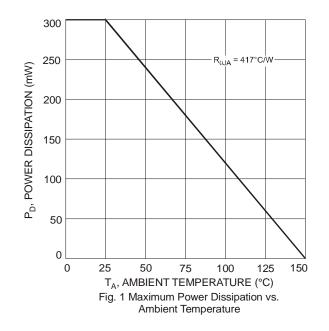
3. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on page 4 or in Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.

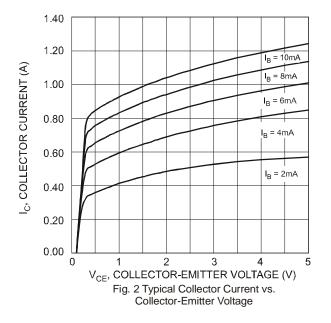


Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 4)						
Collector-Base Breakdown Voltage	V _{(BR)CBO}	80	_		V	$I_{C} = 100 \mu A, I_{E} = 0$
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	60	_	_	V	$I_{\rm C} = 10 {\rm mA}, I_{\rm B} = 0$
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	5	_	_	V	$I_{E} = 100 \mu A, I_{C} = 0$
Collector Cutoff Current			_	100	nA	$V_{CB} = 60V, I_E = 0$
	I _{CBO}			50	μΑ	V _{CB} = 60V, I _E = 0, T _A = 150°C
Collector Cutoff Current	ICES	_	_	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)						
		250	320			$V_{CE} = 5V, I_{C} = 1mA$
DC Current Gain	h _{FE}	200	280	—	V	$V_{CE} = 5V, I_{C} = 500 \text{mA}$
		100	165	_		$V_{CE} = 5V, I_C = 1A$
			80	110		$I_{C} = 100 \text{mA}, I_{B} = 1 \text{mA}$
Collector-Emitter Saturation Voltage	V _{CE(SAT)}		80	140	mV	$I_{C} = 500 \text{mA}, I_{B} = 50 \text{mA}$
			140	250		$I_{C} = 1A, I_{B} = 100mA$
Collector-Emitter Saturation Resistance	R _{CE(SAT)}		140	250	mΩ	$I_{C} = 1A, I_{B} = 100 \text{mA}$
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⊤	150	270	_	MHz	V _{CE} = 10V, I _C = 50mA, f = 100MHz

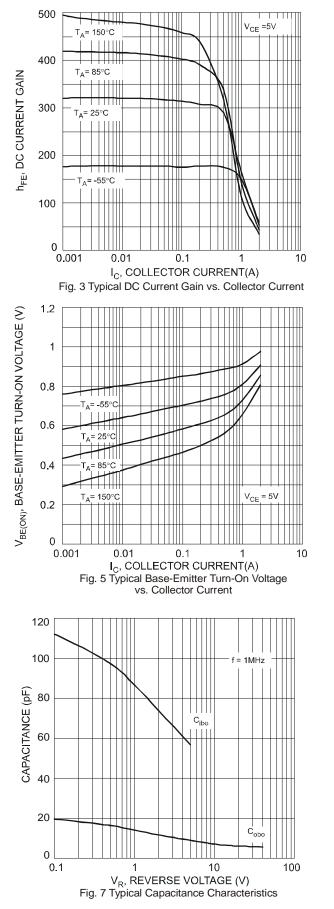
Notes: 4. Measured under pulsed conditions. Pulse width = 300μ s. Duty cycle $\leq 2\%$.

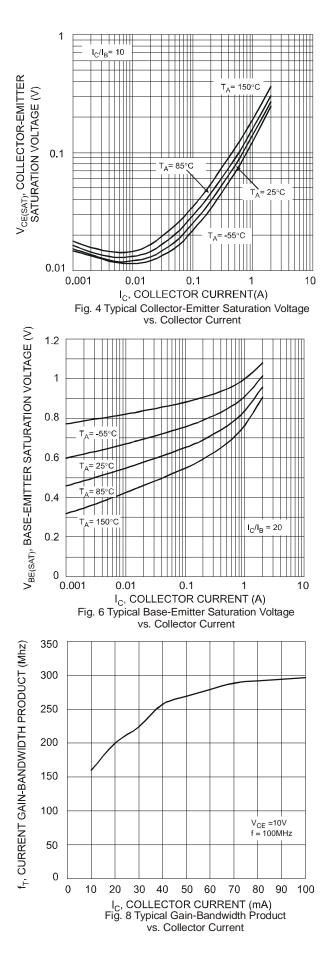




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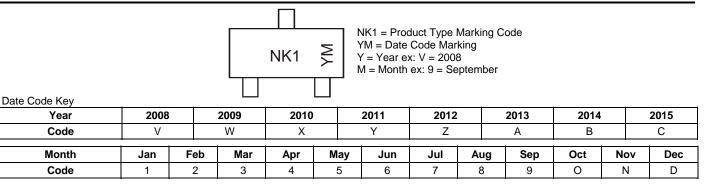


Ordering Information (Note 5)

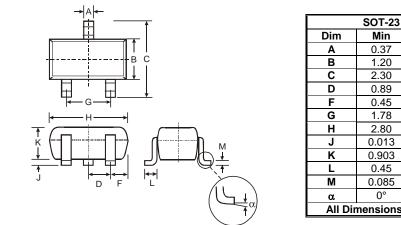
Device	Packaging	Shipping	
DNLS160-7	SOT-23	3000/Tape & Reel	

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

Marking Information

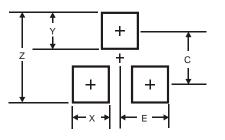


Package Outline Dimensions



Dim	Min	Max		
Α	0.37	0.51		
В	1.20	1.40		
С	2.30	2.50		
D	0.89	1.03		
F	0.45	0.60		
G	1.78	2.05		
н	2.80	3.00		
J	0.013	0.10		
Κ	0.903	1.10		
L	L 0.45 0.61			
М	0.085	0.180		
α	0°	8°		
All Dimensions in mm				

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.9
Х	0.8
Y	0.9
С	2.0
E	1.35

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