DSS5160V

LOW $V_{CE(SAT)}$ PNP SURFACE MOUNT TRANSISTOR

Features

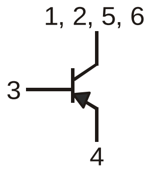
- Epitaxial Planar Die Construction
- Complementary NPN Type Available (DSS4160V)
- Low Collector-Emitter Saturation Voltage, $V_{CE(SAT)}$
- Surface Mount Package Suited for Automated Assembly
- Ultra-Small Surface Mount Package
- **Lead Free/RoHS Compliant (Note 1)**
- **"Green Device" (Note 2)**

Mechanical Data

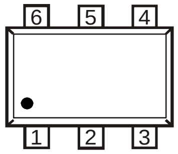
- Case: SOT-563
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page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


Top View


Bottom View



Device Schematic



Pin Out Configuration

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	I_C	-1	A
Peak Pulse Collector Current	I_{CM}	-2	A
Base Current (DC)	I_B	-300	mA
Peak Base Current	I_{BM}	-1	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3) @ T_A = 25°C	P_D	600	mW
Thermal Resistance, Junction to Ambient (Note 3) @ T_A = 25°C	$R_{\theta JA}$	208	°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 with minimum recommended pad layout.

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-80	—	—	V	I_C = -100µA, I_E = 0
Collector-Emitter Breakdown Voltage (Note 4)	$V_{(BR)CEO}$	-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}	200 150 100	— — —	— — —	—	V_{CE} = -5V, I_C = -1mA V_{CE} = -5V, I_C = -500mA V_{CE} = -5V, I_C = -1A
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	— — —	— — —	-160 -175 -330	mV	I_C = -100mA, I_B = -1mA I_C = -500mA, I_B = -50mA I_C = -1A, I_B = -100mA
Collector-Emitter Saturation Resistance	$R_{CE(SAT)}$	—	—	330	mΩ	I_C = -1A, I_B = -100mA
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	—	—	-1.1	V	I_C = -1A, I_B = -50mA
Base-Emitter Turn On Voltage	$V_{BE(ON)}$	—	—	-0.9	V	V_{CE} = -5V, I_C = -1A
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C_{obo}	—	—	15	pF	V_{CB} = -10V, f = 1.0MHz
Current Gain-Bandwidth Product	f_T	150	—	—	MHz	V_{CE} = -10V, I_C = -50mA, f = 100MHz
SWITCHING CHARACTERISTICS						
Turn-On Time	t_{on}	—	80	—	ns	V_{CC} = -10V I_C = -0.5A, I_{B1} = I_{B2} = -25mA
Delay Time	t_d	—	35	—	ns	
Rise Time	t_r	—	45	—	ns	
Turn-Off Time	t_{off}	—	260	—	ns	
Storage Time	t_s	—	225	—	ns	
Fall Time	t_f	—	35	—	ns	

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

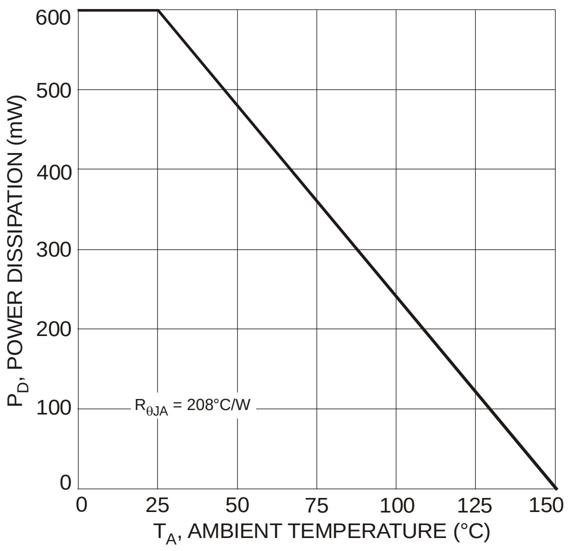


Fig. 1 Power Dissipation vs.
Ambient Temperature (Note 3)

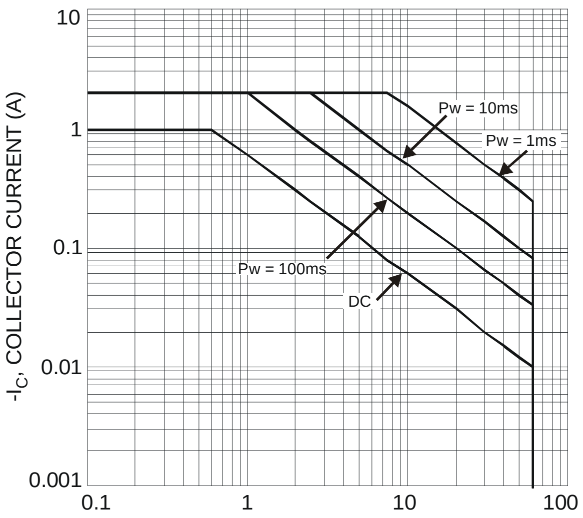


Fig. 2 Typical Collector Current
vs. Collector-Emitter Voltage (Note 3)

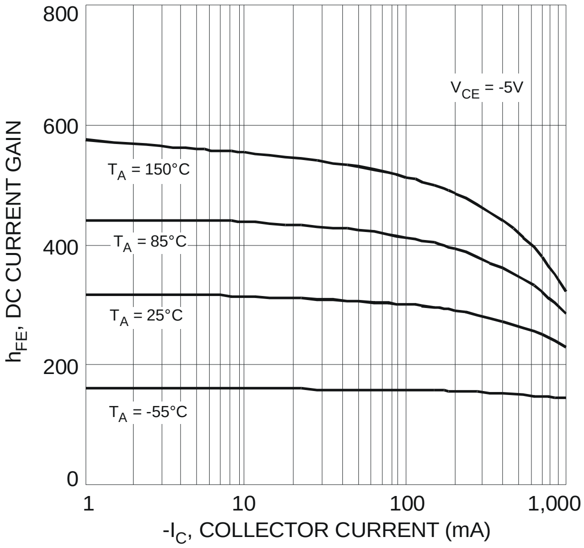


Fig. 3 Typical DC Current Gain vs. Collector Current

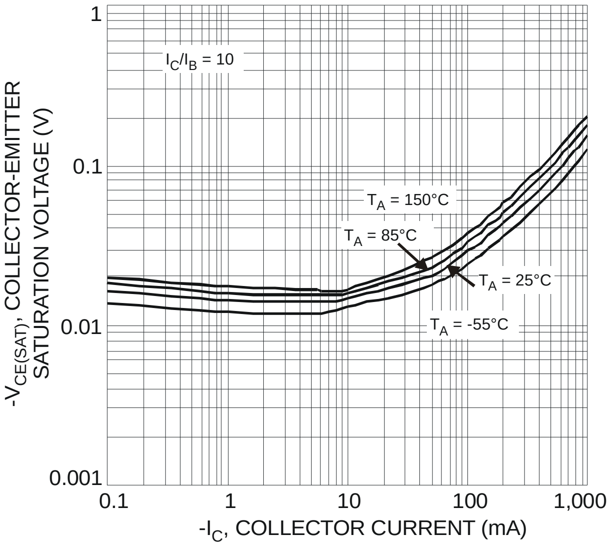


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

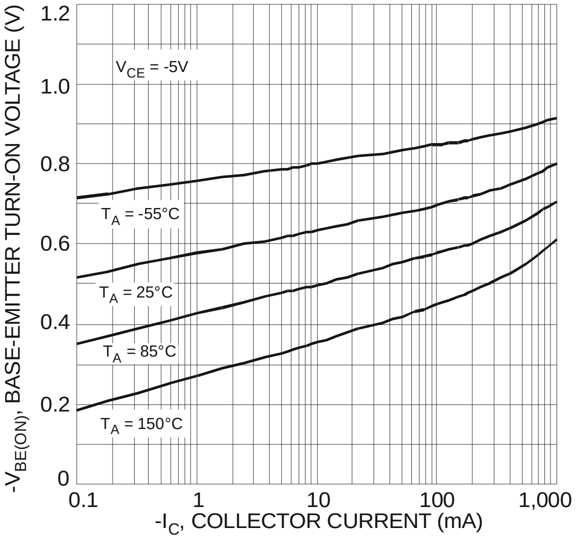


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

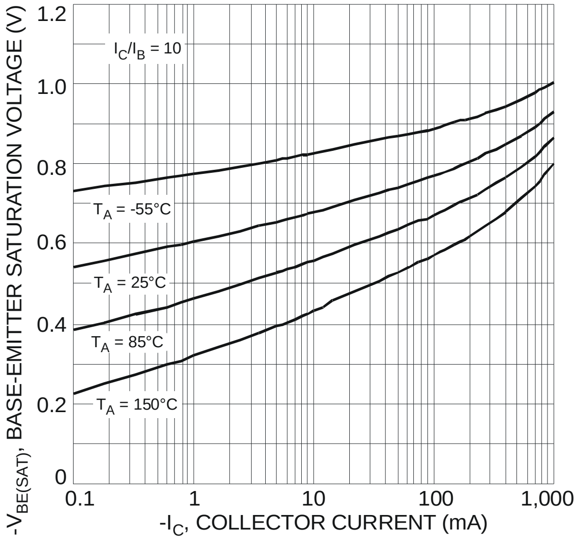


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

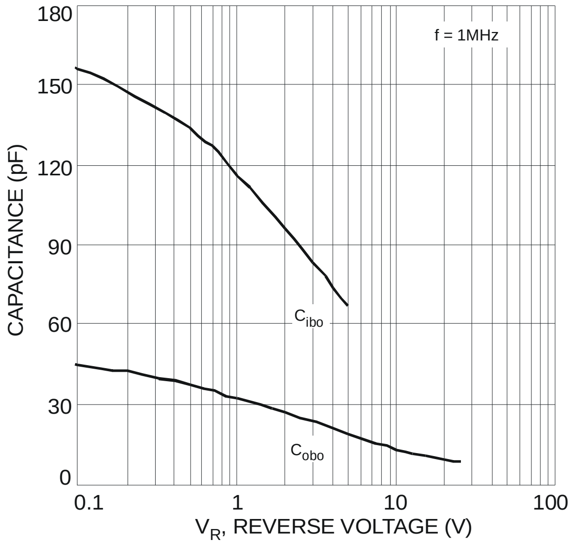


Fig. 7 Typical Capacitance Characteristics

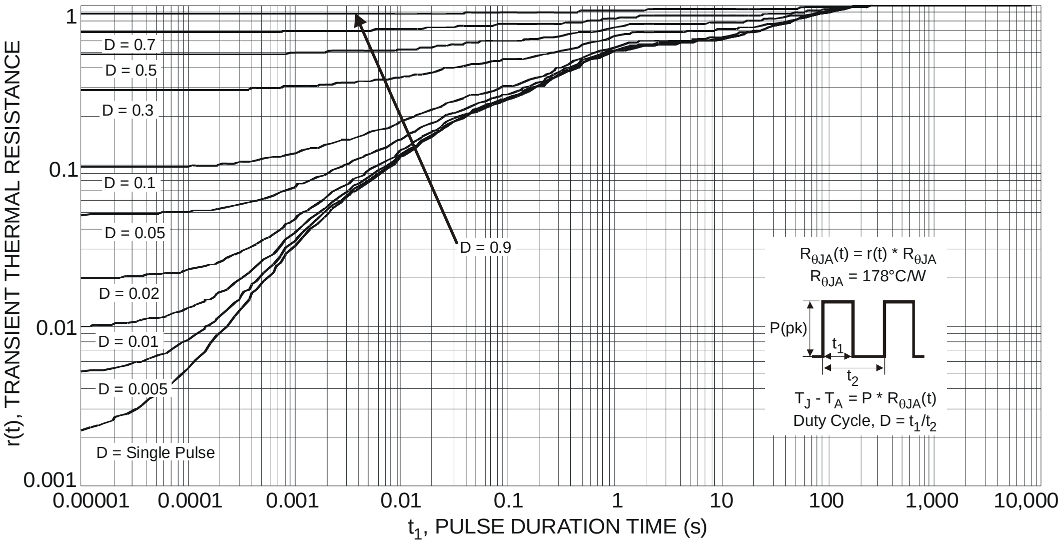


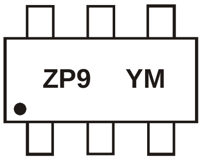
Fig. 8 Transient Thermal Response (Note 3)

Ordering Information (Note 5)

Part Number	Case	Packaging
DSS5160V-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



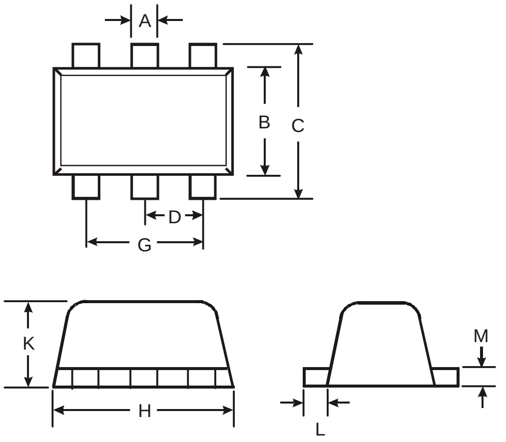
ZP9 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: V = 2008)
M = Month (ex: 9 = September)

Date Code Key

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

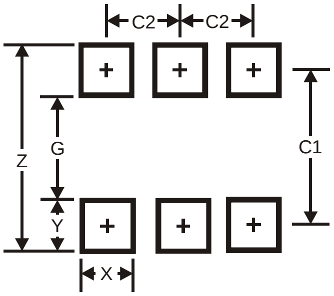
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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