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[ZXTP19060CGTA](#)

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ZXTP19060CG

60V PNP MEDIUM POWER TRANSISTOR IN SOT223

Features

- $BV_{CEO} > -60V$
- $BV_{ECO} > -7V$
- $I_C = 5A$ High Continuous Current
- Low Saturation Voltage $V_{CE(sat)} < -80mV @ 1A$
- $R_{CE(sat)} = 50m\Omega$
- Complementary PNP Type: ZXTN19060CG
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

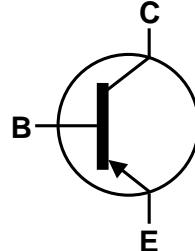
- Case: SOT223
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads; Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.112 grams (Approximate)

Applications

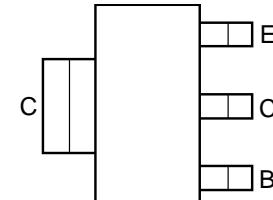
- Motor Drive
- High Side Driver



Top View



Device Symbol



Top View
Pin-Out

Ordering Information (Note 4)

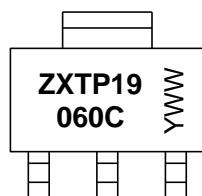
Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP19060CGTA	AEC-Q101	ZXTP19060C	7	12	1,000

Notes:

1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information

SOT223



ZXTP19060C = Product Type Marking Code
 YWW = Date Code Marking
 Y or \bar{Y} = Last Digit of Year (ex: 5= 2015)
 WW or \bar{WW} = Week Code (01~53)

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	-60	V
Collector-Emitter Voltage	V _{CEO}	-60	V
Emitter-Collector Voltage (reverse blocking)	V _{ECX}	-7	V
Emitter-Base Voltage	V _{EBO}	-7	V
Continuous Collector Current	I _C	-5	A
Base Current	I _B	-1	A
Peak Pulse Current	I _{CM}	-7	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation Linear Derating Factor	P _D	1.2	W mW/°C
		9.6	
		1.6	
		12.8	
		3	
Thermal Resistance, Junction to Ambient	R _{θJA}	24	°C/W
		5.3	
		42	
		104	
		78	
Thermal Resistance, Junction to Lead	R _{θJL}	42	°C/W
Operating and Storage Temperature Range		23.5	
T _J , T _{STG}		16	
		-55 to +150	°C

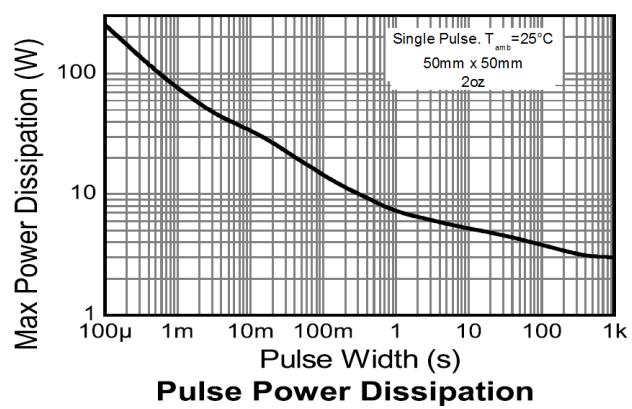
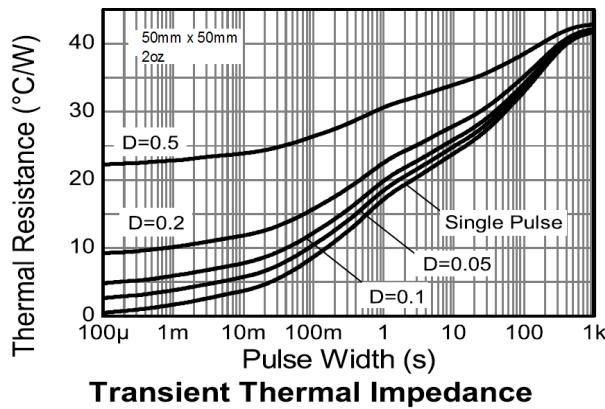
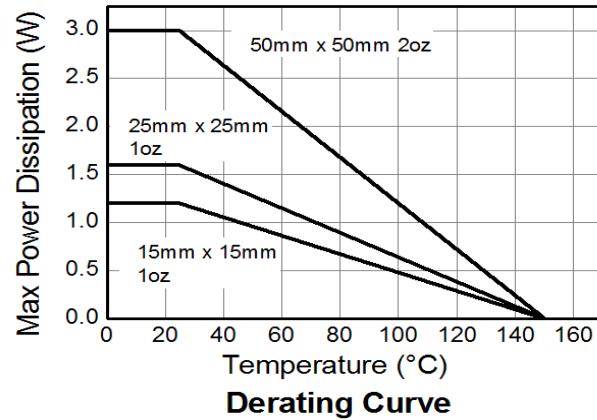
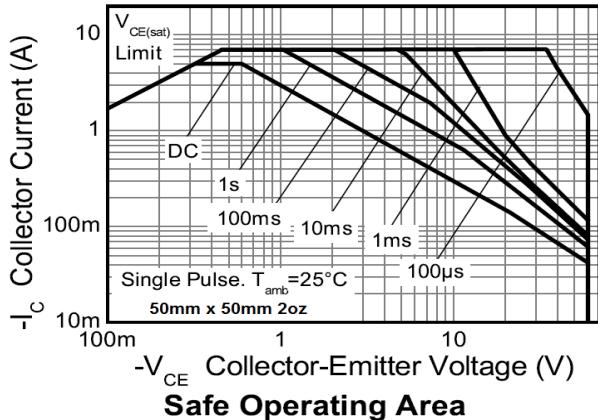
ESD Ratings (Note 10)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

Notes:

- 5. For a device mounted with the collector lead on 15mm x 15mm 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in steady-state.
- 6. Same as Note 6, except the device is mounted on 25mm x 25mm 1oz copper.
- 7. Same as Note 6, except the device is mounted on 50mm x 50mm 2oz copper.
- 8. Same as Note 8 measured at t<5 seconds.
- 9. Thermal resistance from junction to solder-point (at the end of the collector lead).
- 10. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

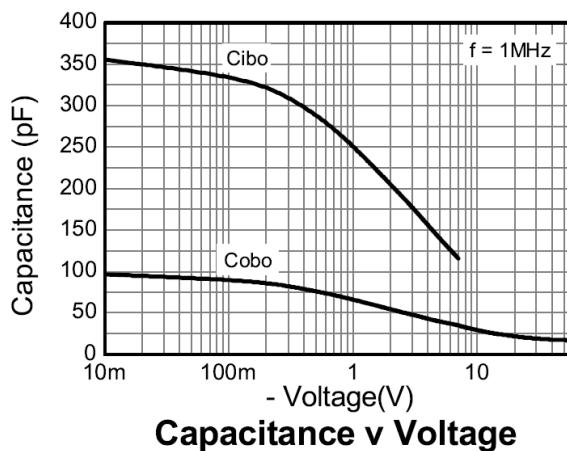
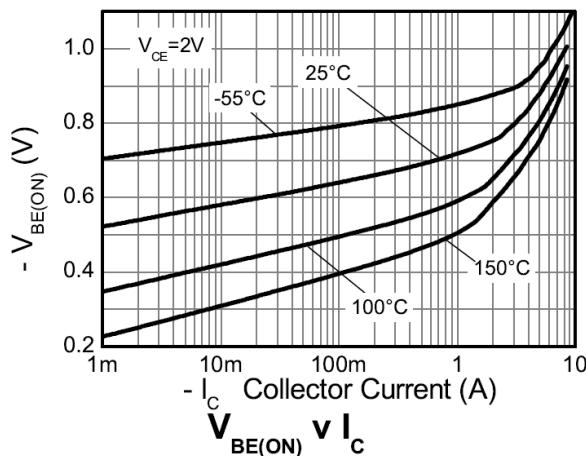
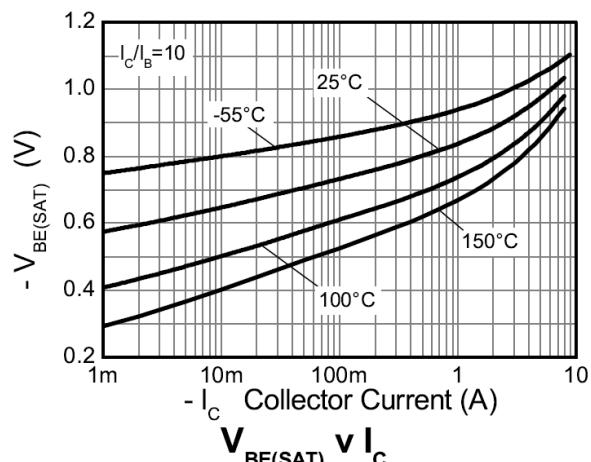
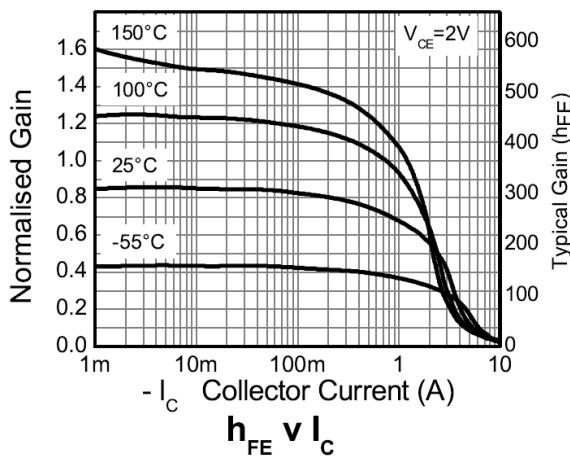
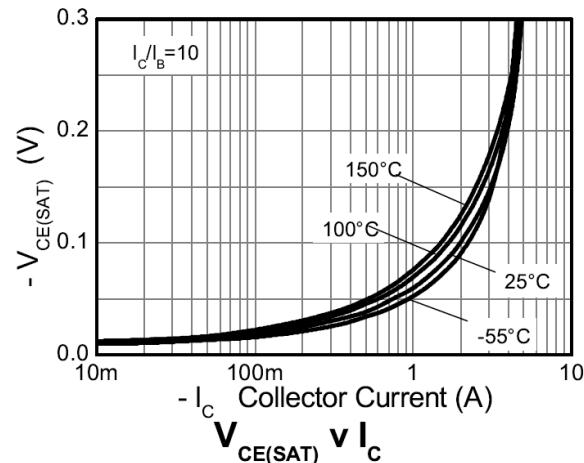
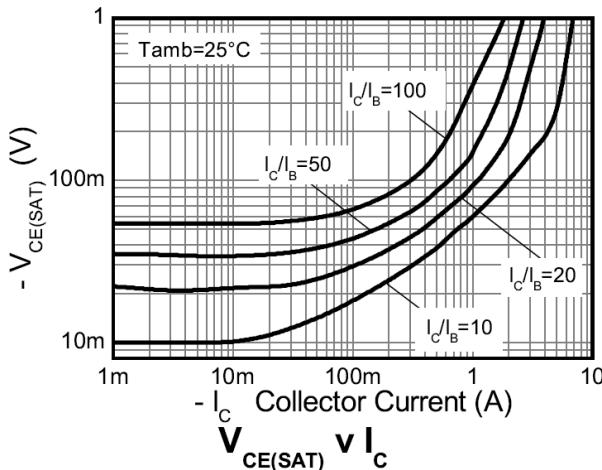


Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-60	-110	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 11)	BV_{CEO}	-60	-90	—	V	$I_C = -10\text{mA}$
Emitter-Collector Breakdown Voltage (reverse blocking)	BV_{ECX}	-7	-8.4	—	V	$I_C = -100\mu\text{A}$, $R_{\text{BC}} < 1\text{k}\Omega$ or $0.25\text{V} < V_{\text{BC}} > -0.25\text{V}$
Emitter-Collector Breakdown Voltage (reverse blocking)	BV_{ECO}	-7	-8.8	—	V	$I_E = -100\mu\text{A}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.4	—	V	$I_E = -100\mu\text{A}$
Collector Cut-Off Current	I_{CBO}	—	< 1	-50	nA	$V_{\text{CB}} = -60\text{V}$
Emitter Cut-Off Current	I_{EBO}	—	< 1	-50	nA	$V_{\text{EB}} = -5.6\text{V}$
Collector-Emitter Saturation Voltage (Note 11)	$V_{\text{CE}(\text{sat})}$	—	-62	-80	mV	$I_C = -1\text{A}$, $I_B = -100\text{mA}$
		—	-145	-205	mV	$I_C = -1\text{A}$, $I_B = -20\text{mA}$
		—	-500	-750	mV	$I_C = -2\text{A}$, $I_B = -40\text{mA}$
		—	-105	-165	mV	$I_C = -2\text{A}$, $I_B = -200\text{mA}$
		—	-145	-200	mV	$I_C = -3\text{A}$, $I_B = -300\text{mA}$
		—	-300	-500	mV	$I_C = -5\text{A}$, $I_B = -500\text{mA}$
Base-Emitter Saturation Voltage (Note 11)	$V_{\text{BE}(\text{sat})}$	—	-975	-1050	mV	$I_C = -5\text{A}$, $I_B = -500\text{mA}$
Base-Emitter Turn-On Voltage (Note 11)	$V_{\text{BE}(\text{on})}$	—	-890	-1000	mV	$I_C = -5\text{A}$, $V_{\text{CE}} = -2\text{V}$
DC Current Gain (Note 11)	h_{FE}	200	330	500	—	$I_C = -100\text{mA}$, $V_{\text{CE}} = -2\text{V}$
		160	260	—	—	$I_C = -1\text{A}$, $V_{\text{CE}} = -2\text{V}$
		20	40	—	—	$I_C = -5\text{A}$, $V_{\text{CE}} = -2\text{V}$
Current Gain-Bandwidth Product (Note 11)	f_T	—	180	—	MHz	$V_{\text{CE}} = -10\text{V}$, $I_C = -50\text{mA}$, $f = 50\text{MHz}$
Input Capacitance (Note 11)	C_{ibo}	—	280	400	pF	$V_{\text{EB}} = -0.5\text{V}$, $f = 1\text{MHz}$
Output Capacitance (Note 11)	C_{obo}	—	29.5	40	pF	$V_{\text{CB}} = -10\text{V}$, $f = 1\text{MHz}$
Delay Time	t_d	—	24.3	—	ns	$I_C = -500\text{mA}$, $V_{\text{CC}} = -10\text{V}$, $I_{B1} = -I_{B2} = -50\text{mA}$
Rise Time	t_r	—	13.2	—	ns	
Storage Time	t_s	—	456	—	ns	
Fall Time	t_f	—	68.2	—	ns	

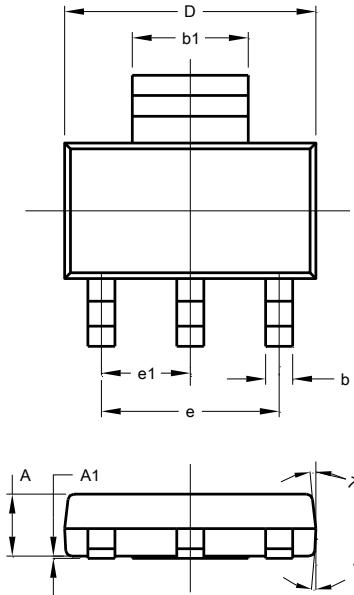
Note: 11. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.

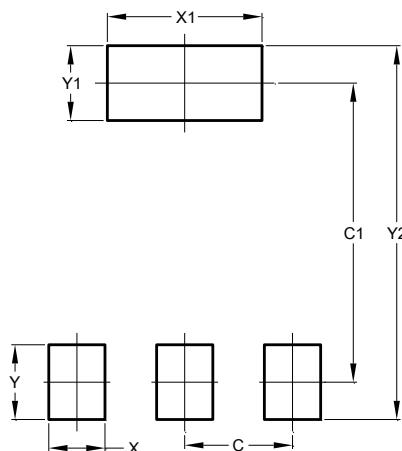


SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89

All Dimensions in mm

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

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