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[ZXT2063E6TA](#)

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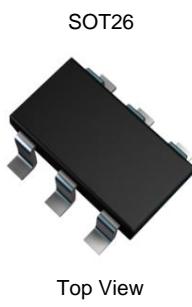
40V COMPLEMENTARY MEDIUM POWER TRANSISTOR IN SOT26

Features

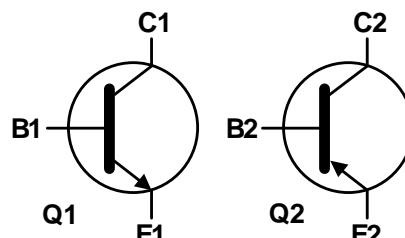
- NPN + PNP Combination
- $BV_{CEO} > 40$ (-40)V
- $BV_{ECO} > 6$ (-3)V
- $I_{CM} = 9$ (-9)A Peak Pulse Current
- $V_{CE(sat)} < 60$ (-90)mV @ 1A
- $R_{CE(sat)} = 38$ (58)mΩ
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- Qualified to AEC-Q101 Standards for High Reliability

Description

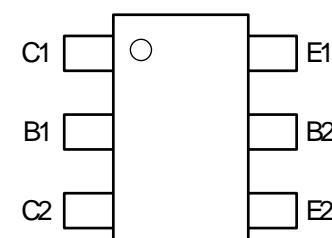
Advanced process capability is used to achieve this high performance device. Combining NPN and PNP transistors in the SOT26 package provides a compact solution for the intended applications.



Top View



Device Symbol



Top View
Pin-Out

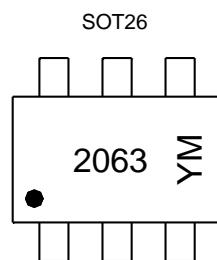
Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTC2063E6TA	2063	7	8	3,000

Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See <http://www.diodes.com/> 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>.

Marking Information



2063 = Product Type Marking Code
 YM = Date Code Marking
 Y or \bar{Y} = Year (ex: C = 2015)
 M or \bar{M} = Month (ex: 9 = September)

Date Code Key

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Code	C	D	E	F	G	H	I	J	K	L	M

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

Absolute Maximum Ratings – Q1 (NPN Transistor) (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	130	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Collector Voltage (Reverse blocking)	V_{ECO}	6	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	3.5	A
Peak Pulsed Collector Current	I_{CM}	9	A
Base Current	I_B	1	A

Absolute Maximum Ratings – Q2 (PNP Transistor) (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-45	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Collector Voltage (Reverse blocking)	V_{ECO}	-3	V
Emitter-Base Voltage	V_{EBO}	-7	V
Continuous Collector Current	I_C	-3	A
Peak Pulsed Collector Current	I_{CM}	-9	A
Base Current	I_B	-1	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation Linear Derating Factor	P_D	0.7	W mW/°C
		5.6	
		0.9	
		7.2	
		1.1	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	8.8	°C/W
		1.1	
		8.8	
		1.7	
		13.6	
Thermal Resistance, Junction to Lead	$R_{\theta JL}$	179	
		139	
		113	
		113	
		73	
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

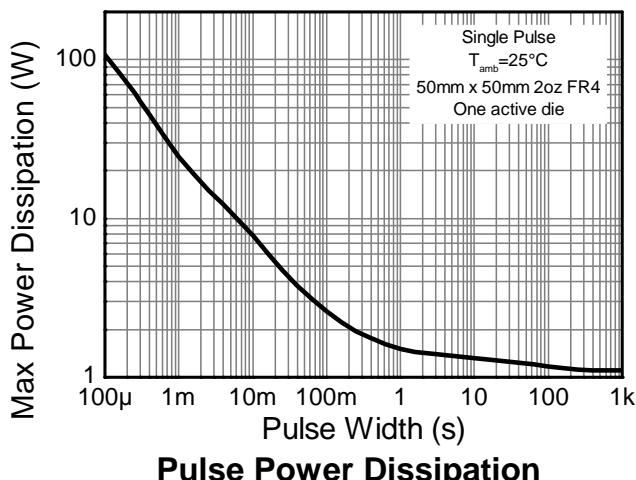
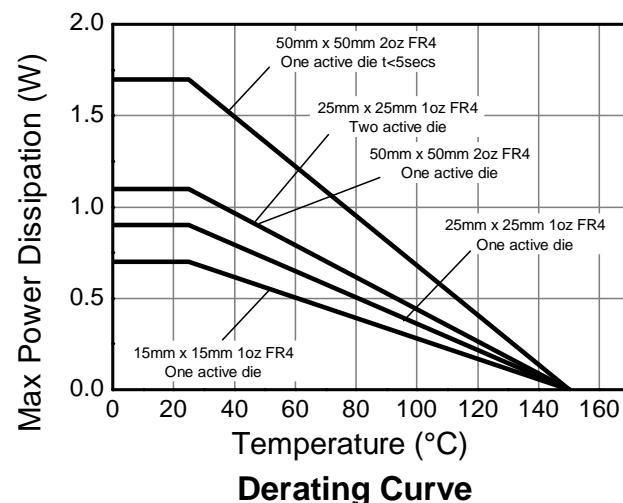
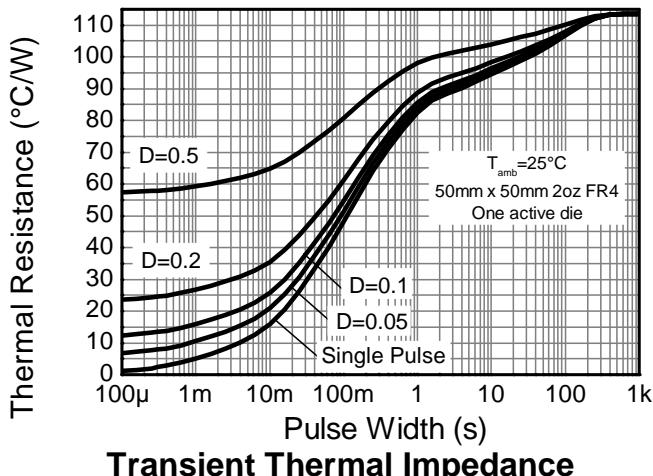
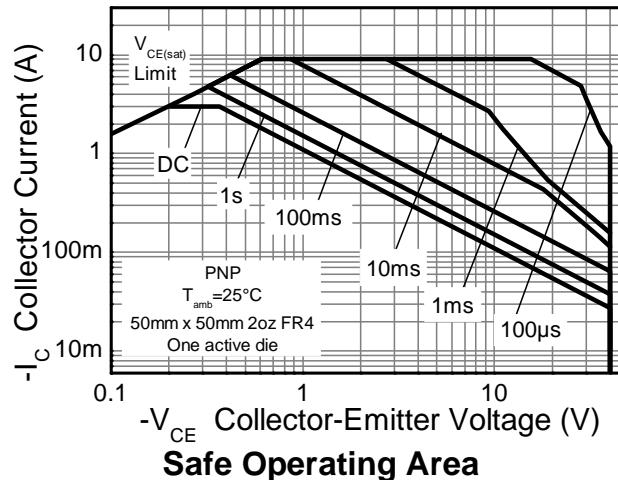
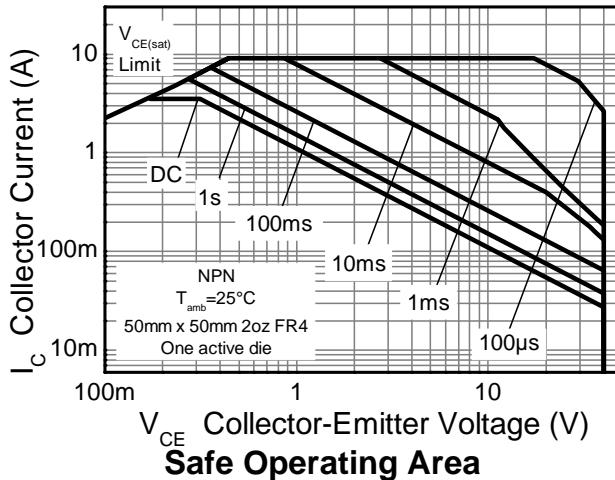
ESD Ratings (Note 12)

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 surface mounted on 15mm x 15mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
6. Same as Note (5), except the device is surface mounted on 25mm x 25mm 1oz copper.
7. Same as Note (5), except the device is surface mounted on 50mm x 50mm 2oz copper.
8. Same as Note (7), except the device is measured at $t < 5$ seconds.
9. For device with one active die, both collectors attached to a common heatsink.
10. For device with two active dice running at equal power, split heatsink 50% to each collector.
11. Thermal resistance from junction to solder-point (at the end of the collector lead).
12. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information



Electrical Characteristics – Q1 (NPN Transistor) (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	130	170	—	V	$I_C = 100\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage (Note 13)	BV_{CEO}	40	63	—	V	$I_C = 10\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	BV_{EBO}	7	8.3	—	V	$I_E = 100\mu\text{A}, I_C = 0$
Emitter-Collector Breakdown Voltage (reverse blocking)	BV_{ECX}	6	7.4	—	V	$I_E = 100\mu\text{A}, R_{BC} < 1\text{k}\Omega \text{ or } 0.25\text{V} > V_{BC} > -0.25\text{V}$
Emitter-Collector Breakdown Voltage (base open)	BV_{ECO}	6	7.4	—	V	$I_E = 100\mu\text{A}$
Collector Cutoff Current	I_{CBO}	—	<1	50 20	nA μA	$V_{\text{CB}} = 100\text{V}$ $V_{\text{CB}} = 100\text{V}, T_A = +100^\circ\text{C}$
Collector Cutoff Current	I_{EBO}	—	<1	50	nA	$V_{\text{EB}} = 5.6\text{V}$
ON CHARACTERISTICS (Note 13)						
DC Current Gain	h_{FE}	300 280 40	450 400 60	900	—	$I_C = 10\text{mA}, V_{\text{CE}} = 2\text{V}$ $I_C = 1.0\text{A}, V_{\text{CE}} = 2\text{V}$ $I_C = 3.5\text{A}, V_{\text{CE}} = 2\text{V}$
Collector-Emitter Saturation Voltage	$V_{\text{CE}(\text{sat})}$	—	50 85 150 135	60 110 220 195	mV	$I_C = 1.0\text{A}, I_B = 100\text{mA}$ $I_C = 1.0\text{A}, I_B = 20\text{mA}$ $I_C = 2.0\text{A}, I_B = 40\text{mA}$ $I_C = 3.5\text{A}, I_B = 350\text{mA}$
Base-Emitter Saturation Voltage	$V_{\text{BE}(\text{sat})}$	—	960	1,050	mV	$I_C = 3.5\text{A}, I_B = 350\text{mA}$
Base-Emitter Turn-On Voltage	$V_{\text{BE}(\text{on})}$	—	860	950	mV	$I_C = 3.5\text{A}, V_{\text{CE}} = 2\text{V}$
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C_{obo}	—	12	20	pF	$V_{\text{CB}} = 10\text{V}, f = 1.0\text{MHz}$
Current Gain-Bandwidth Product	f_T	—	190	—	MHz	$V_{\text{CE}} = 10\text{V}, I_C = 50\text{mA}, f = 100\text{MHz}$
Delay Time	t_d	—	64	—	ns	$V_{\text{CC}} = 10\text{V}, I_C = 1\text{A}, I_{B1} = I_{B2} = 10\text{mA}$
Rise Time	t_r	—	108	—	ns	
Storage Time	t_s	—	428	—	ns	
Fall Time	t_f	—	130	—	ns	

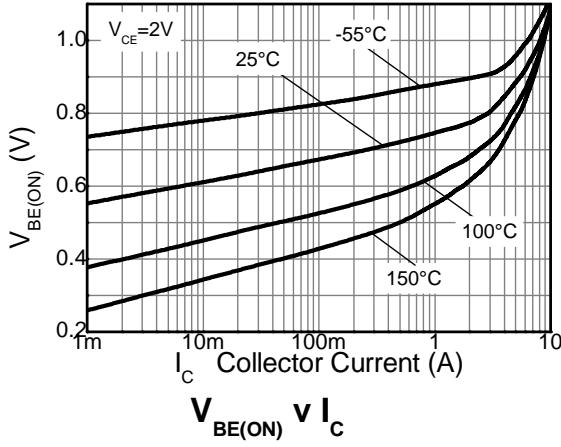
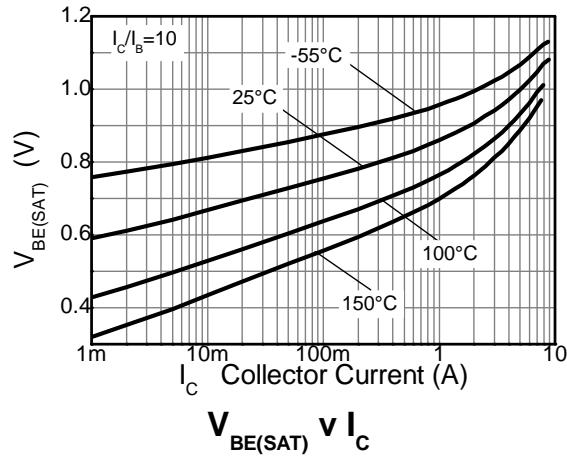
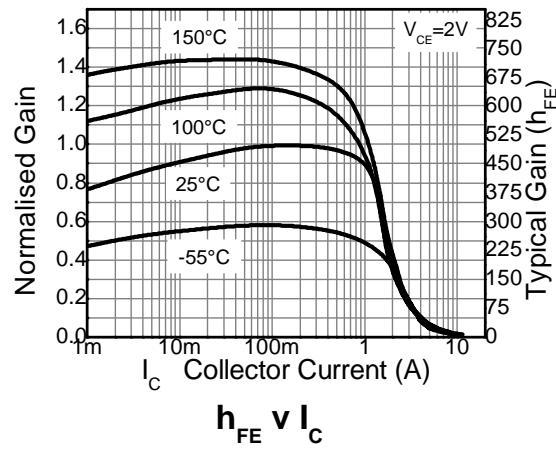
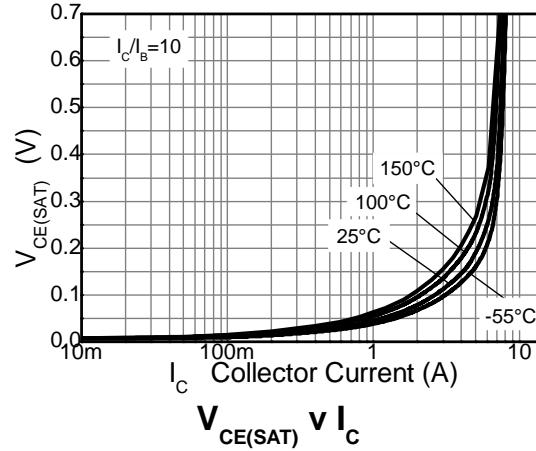
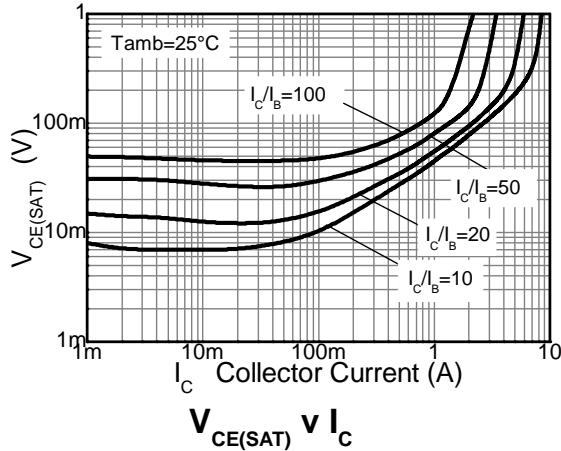
Note: 13. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

Electrical Characteristics – Q2 (PNP Transistor) (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

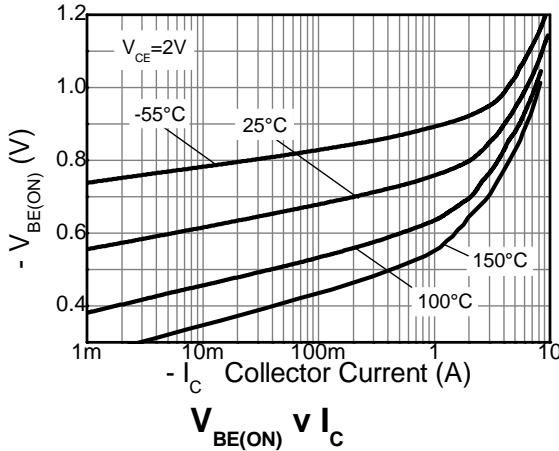
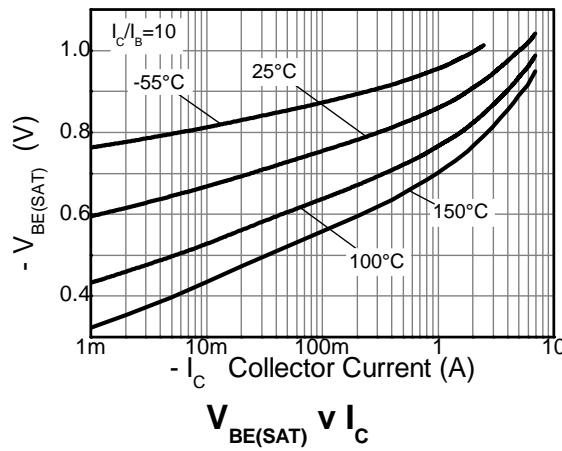
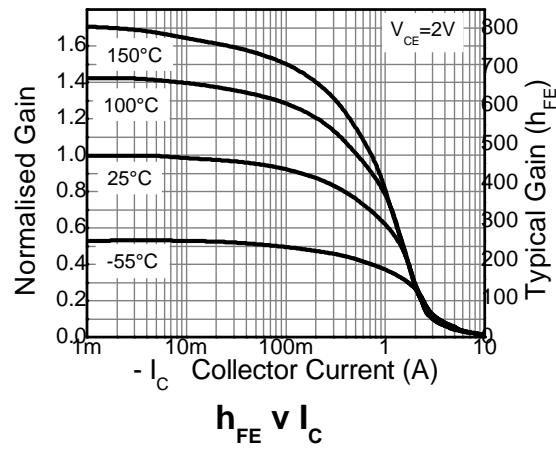
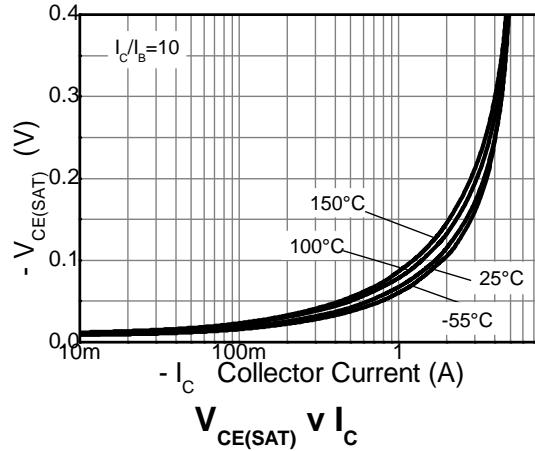
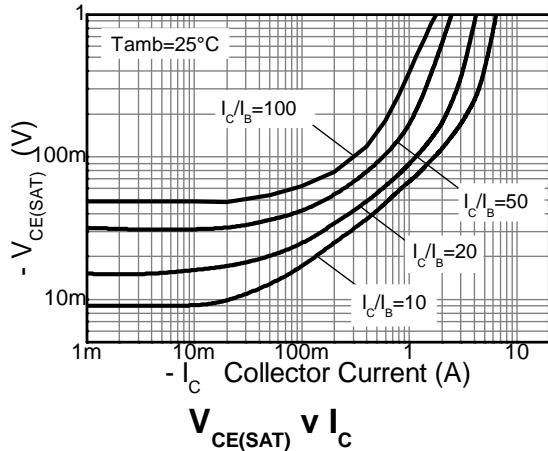
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	-45	-80	—	V	$I_C = -100\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage (Note 14)	BV_{CEO}	-40	-65	—	V	$I_C = -10\text{mA}, I_B = 0$
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.3	—	V	$I_E = -100\mu\text{A}, I_C = 0$
Emitter-Collector Breakdown Voltage (reverse blocking)	BV_{ECX}	-6	-7.4	—	V	$-I_E = 100\mu\text{A}, R_{BC} < 1\text{k}\Omega \text{ or } 0.25\text{V} < V_{BC} < -0.25\text{V}$
Emitter-Collector Breakdown Voltage (base open)	BV_{ECO}	-3	-8.7	—	V	$I_E = -100\mu\text{A}$
Collector Cutoff Current	I_{CBO}	—	<1	-50	nA μA	$V_{CB} = -36\text{V}$ $V_{CB} = -36\text{V}, T_A = +100^\circ\text{C}$
Collector Cutoff Current	I_{EBO}	—	<1	-50	nA	$V_{EB} = -5.6\text{V}$
ON CHARACTERISTICS (Note 14)						
DC Current Gain	h_{FE}	300 200 20	450 280 50	900 — —	—	$I_C = -10\text{mA}, V_{CE} = -2\text{V}$ $I_C = -1.0\text{A}, V_{CE} = -2\text{V}$ $I_C = -3.0\text{A}, V_{CE} = -2\text{V}$
Collector-Emitter Saturation Voltage	$V_{\text{CE}(\text{sat})}$	— — —	-70 -195 -175	-90 -290 -260	mV	$I_C = -1.0\text{A}, I_B = -100\text{mA}$ $I_C = -1.0\text{A}, I_B = -20\text{mA}$ $I_C = -3.0\text{A}, I_B = -300\text{mA}$
Base-Emitter Saturation Voltage	$V_{\text{BE}(\text{sat})}$	—	-935	-1,000	mV	$I_C = -3.0\text{A}, I_B = -300\text{mA}$
Base-Emitter Turn-On Voltage	$V_{\text{BE}(\text{on})}$	—	-855	-950	mV	$I_C = -3.0\text{A}, V_{CE} = -2\text{V}$
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C_{obo}	—	17	25	pF	$V_{CB} = -10\text{V}, f = 1.0\text{MHz}$
Current Gain-Bandwidth Product	f_T	—	270	—	MHz	$V_{CE} = -10\text{V}, I_C = -50\text{mA}, f = 100\text{MHz}$
Delay Time	t_d	—	57	—	ns	$V_{CC} = -10\text{V}, I_C = -1\text{A}, I_{B1} = I_{B2} = -10\text{mA}$
Rise Time	t_r	—	69	—	ns	
Storage Time	t_s	—	154	—	ns	
Fall Time	t_f	—	60	—	ns	

Note: 14. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

Typical Electrical Characteristics – Q1 (NPN Transistor) (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



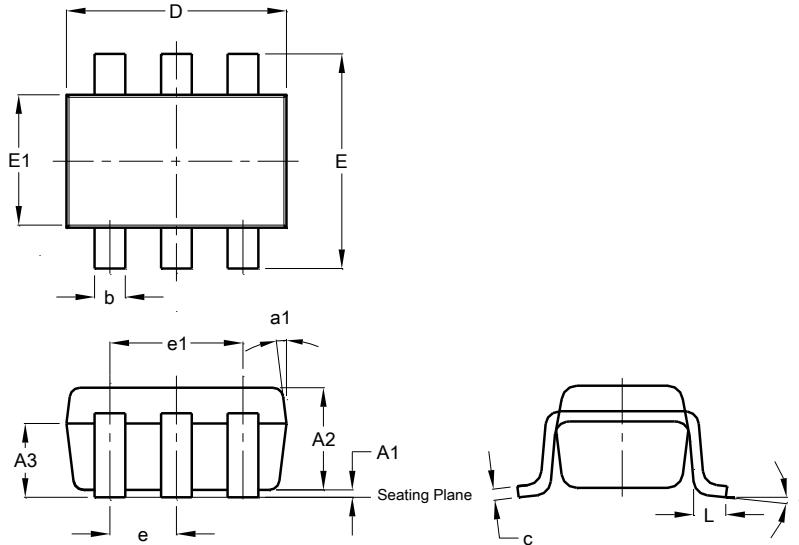
Typical Electrical Characteristics – Q2 (PNP Transistor) (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimensions

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

SOT26



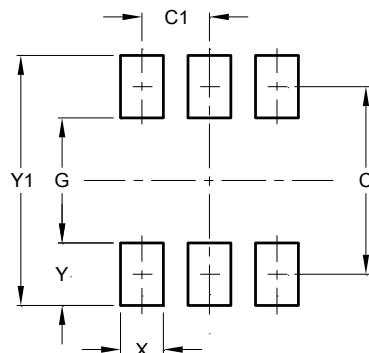
SOT26			
Dim	Min	Max	Typ
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	-	-	0.95
e1	-	-	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	-	-	8°
a1	-	-	7°

All Dimensions in mm

Suggested Pad Layout

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

SOT26



Dimensions	Value (in mm)
C	2.40
C1	0.95
G	1.60
X	0.55
Y	0.80
Y1	3.20

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