

**ZXTP2041F**

**40V PNP SILICON PLANAR MEDIUM POWER TRANSISTOR**

**Features**

- $V_{(BR)CEO} > -40V$
- High current capability  $I_C = -1A$
- Low saturation voltage  $V_{CE(sat)} < -500mV @ -1A$
- "Lead Free", RoHS Compliant (Note 1)

**Application**

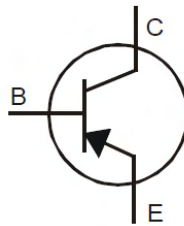
- Power MOSFET gate driving
- Low loss power switching

**Mechanical Data**

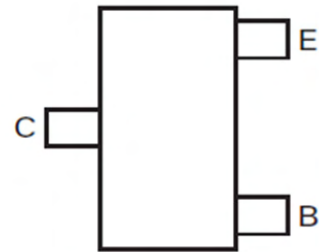
- Case: SOT23
- Moisture Sensitivity: Level 1 per J-STD-020
- UL Flammability Rating 94V-0
- Terminals: Matte Tin Finish
- Weight: 0.008 grams (Approximate)



Top View



Device symbol



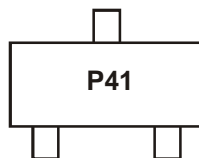
Pin-out Top

**Ordering Information** (Note 2)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTP2041FTA	P41	7	8	3,000

- Notes:
1. No purposefully added lead.
  2. For packaging details, go to our website at <http://www.diodes.com>.

**Marking Information**



P41 = Product Type Marking Code

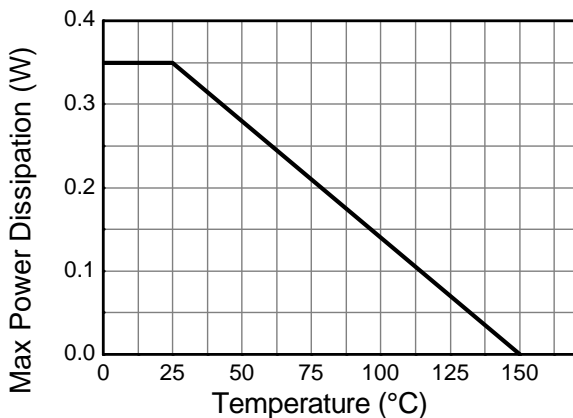
**Maximum Ratings** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CB0}$	-40	V
Collector-Emitter Voltage	$V_{CEO}$	-40	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Continuous Collector Current (Note 3)	$I_C$	-1	A
Peak Pulse Current	$I_{CM}$	-2	A
Peak Base Current	$I_{BM}$	-1	A

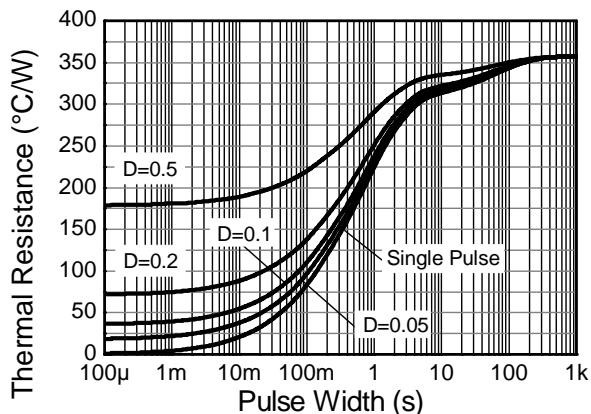
**Thermal Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector Power Dissipation (Note 3)	$P_D$	350	mW
Thermal Resistance, Junction to Ambient (Note 3)	$R_{\theta JA}$	357	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

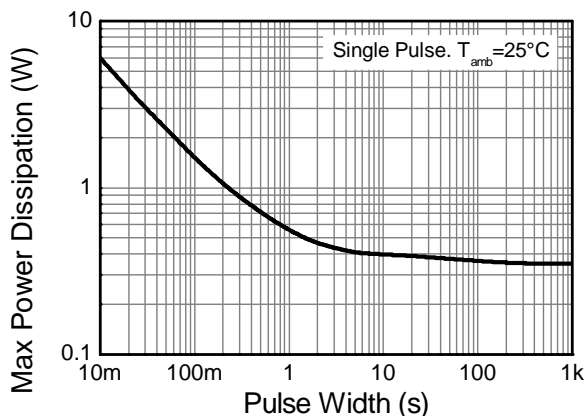
Notes: 3. For the device mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.



**Derating Curve**



**Transient Thermal Impedance**



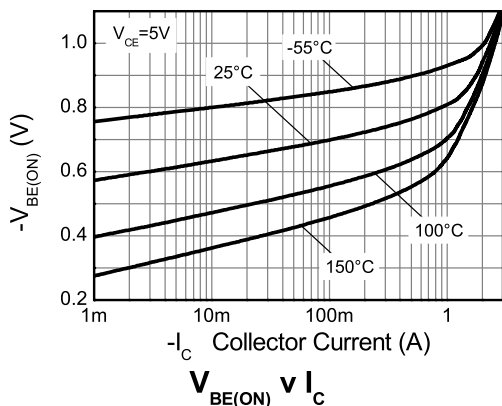
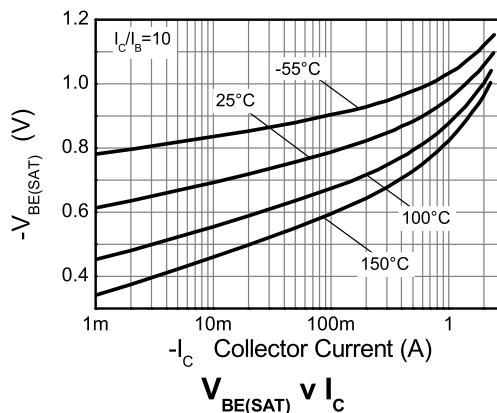
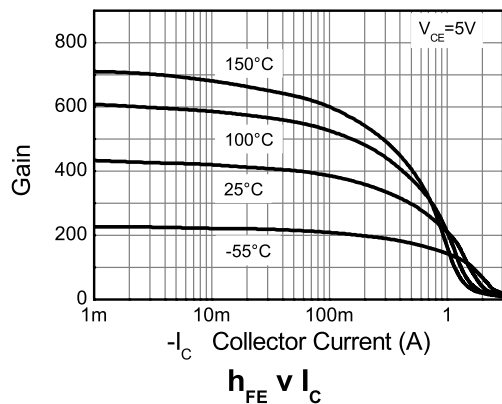
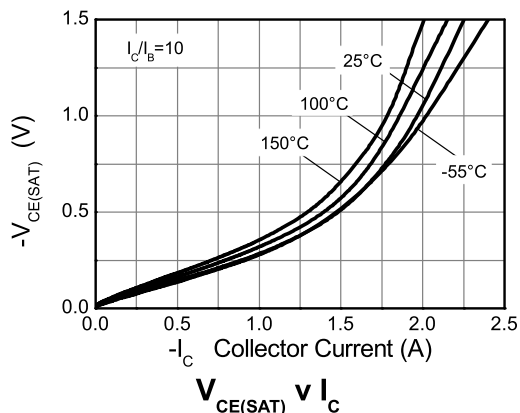
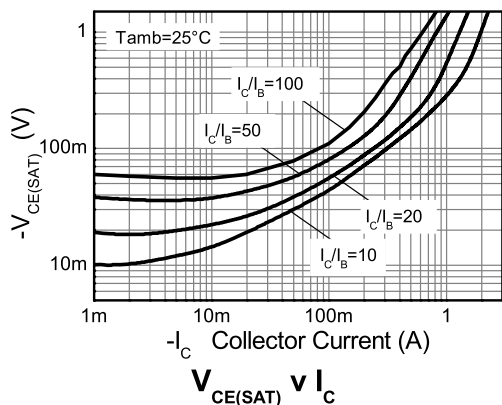
**Pulse Power Dissipation**

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	-40	-	-	V	I <sub>C</sub> = -100μA
Collector-Emitter Breakdown Voltage (Note 4)	V <sub>(BR)CEO</sub>	-40	-	-	V	I <sub>C</sub> = -10mA
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	-5	-	-	V	I <sub>E</sub> = -100μA
Collector Cutoff Current	I <sub>CBO</sub>	-	-	-100	nA	V <sub>CB</sub> = -30V
Emitter Cutoff Current	I <sub>EBO</sub>	-	-	-100	nA	V <sub>EB</sub> = -4V
Emitter Cutoff Current	I <sub>CES</sub>	-	-	-100	nA	V <sub>CE</sub> = -30V
DC current transfer Static ratio (Note 4)	h <sub>FE</sub>	300	-	-	-	I <sub>C</sub> = -1mA, V <sub>CE</sub> = -5V
		300	-	800		I <sub>C</sub> = -100mA, V <sub>CE</sub> = -5V
		250	-	-		I <sub>C</sub> = -500mA, V <sub>CE</sub> = -5V
		160	-	-		I <sub>C</sub> = -1A, V <sub>CE</sub> = -5V
		30	-	-		I <sub>C</sub> = -2A, V <sub>CE</sub> = -5V
Collector-Emitter Saturation Voltage (Note 4)	V <sub>CE(sat)</sub>	-	-	-0.20	V	I <sub>C</sub> = -100mA, I <sub>B</sub> = -1mA
		-	-	-0.35		I <sub>C</sub> = -500mA, I <sub>B</sub> = -20mA
		-	-	-0.50		I <sub>C</sub> = -1A, I <sub>B</sub> = -100mA
Base-Emitter Saturation Voltage (Note 4)	V <sub>BE(sat)</sub>	-	-	-1.1	V	I <sub>C</sub> = -1A, I <sub>B</sub> = -100mA
Base-Emitter Turn-on Voltage (Note 4)	V <sub>BE(on)</sub>	-	-	-1.0	V	I <sub>C</sub> = -1A, V <sub>CE</sub> = -5V
Transitional Frequency	f <sub>T</sub>	150	300	-	MHz	I <sub>C</sub> = -50mA, V <sub>CE</sub> = -10V, f = 100MHz
Output capacitance	C <sub>obo</sub>	-	-	10	pF	V <sub>CB</sub> = -10V, f = 1MHz,
Switching Time	Delay Time	t <sub>(d)</sub>	-	34.9	ns	V <sub>CC</sub> = -10V, I <sub>C</sub> = -500mA, I <sub>B1</sub> = -I <sub>B2</sub> = 25mA
	Rise Time	t <sub>(r)</sub>	-	19.2		
	Storage Time	t <sub>(s)</sub>	-	249		
	Fall Time	t <sub>(f)</sub>	-	62		

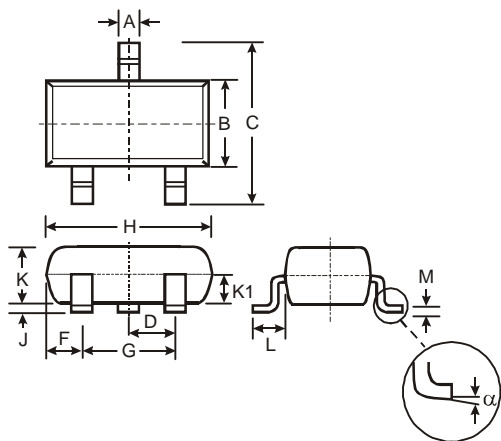
Notes: 4. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤2%.

**Typical Characteristics**



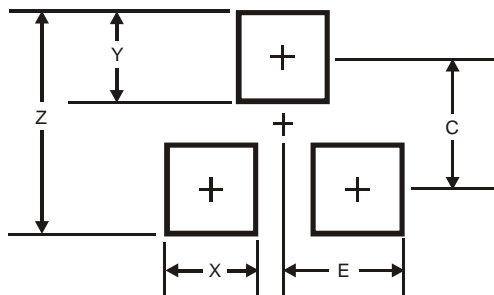
**ZXTP2041F**

**Package Outline Dimensions**



SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.903	1.10	1.00
K1	-	-	0.400
L	0.45	0.61	0.55
M	0.085	0.18	0.11
$\alpha$	0°	8°	-
All Dimensions in mm			

**Suggested Pad Layout**



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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