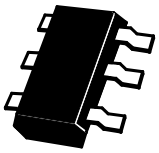
ZXTD6717E6

COMPLEMENTARY NPN/PNP LOW SATURATION DUAL TRANSISTORS

SUMMARY

NPN: V_{CEO}=15V; $V_{CE(sat)}$=0.1V; I_C= 1.5A;
PNP: V_{CEO}=-12V; $V_{CE(sat)}$=-0.175V; I_C= -1.25A;



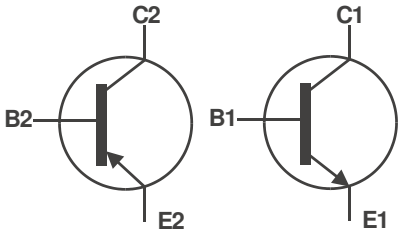
SOT23-6

DESCRIPTION

This new combination device comprises a complementary NPN and PNP low saturation transistor housed in the SOT23-6 package. Users benefit from very efficient performance combining a high current operation, exceptionally low $V_{CE(sat)}$ and high H_{FE} resulting in extremely low on state losses. This dual transistor is ideal for use in a variety of efficient driving functions including motors, lamps, relays and solenoids and will also benefit circuits requiring high output current switching.

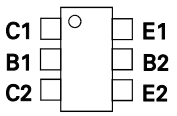
FEATURES

- Low Saturation Voltage
- $R_{CE(sat)}$ values NPN =135mΩ at 1.5A
  - PNP =150mΩ at 1.25A
- h_{FE} min 200 at 1A
- I_C=1.5A Continuous (NPN), 1.25A (PNP)
- SOT23-6 package with P_D = 1.1W



APPLICATIONS

- Various driving functions
  - Lamps
  - Motors
  - Relays and solenoids
- High output current switches



Top View

ORDERING INFORMATION

DEVICE	REEL SIZE (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
ZXTD6717E6TA	7	8mm embossed	3000 units
ZXTD6717E6TC	13	8mm embossed	10000 units

DEVICE MARKING

6717

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	LIMIT NPN	LIMIT PNP	UNIT
Collector-Base Voltage	V_{CBO}	15	-12	V
Collector-Emitter Voltage	V_{CEO}	15	-12	V
Emitter-Base Voltage	V_{EBO}	5	-5	V
Peak Pulse Current	I_{CM}	5	-3	A
Continuous Collector Current	I_C	1.5	-1.25	A
Base Current	I_B	200	-200	mA
Power Dissipation at TA=25°C (a) Linear Derating Factor	P_D	1.1 8.8	1.1 8.8	W mW/°C
Power Dissipation at TA=25°C (b) Linear Derating Factor	P_D	1.7 13.6	1.7 13.6	W mW/°C
Operating and Storage Temperature Range	T_j:T_{stg}	-55 to +150	-55 to +150	°C

THERMAL RESISTANCE

PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)	$R_{\theta JA}$	125	°C/W
Junction to Ambient (b)	$R_{\theta JA}$	45	°C/W

NOTES

(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

(b) For a device surface mounted on FR4 PCB measured at t≤5 secs.

NPN TRANSISTOR
ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated).

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	15			V	I_C=100μA
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	15			V	I_C=10mA*
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5			V	I_E=100μA
Collector Cut-Off Current	I_{CBO}			10	nA	V_{CB}=10V
Emitter Cut-Off Current	I_{EBO}			10	nA	V_{EB}=4V
Collector Emitter Cut-Off Current	I_{CES}			10	nA	V_{CES}=10V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		16.5 40 75 150 205	20 55 100 200 245	mV mV mV mV mV	I_C=100mA, I_B=10mA* I_C=250mA, I_B=10mA* I_C=500mA, I_B=10mA* I_C=1A, I_B=10mA* I_C=1.5A, I_B=20mA*
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		0.93	1.1	V	I_C=1.5A, I_B=20mA*
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		0.865	1.1	V	I_C=1.5A, V_{CE}=2V*
Static Forward Current Transfer Ratio	h_{FE}	200 300 250 200 75 30	420 450 390 300 150 75			I_C=10mA, V_{CE}=2V* I_C=100mA, V_{CE}=2V* I_C=500mA, V_{CE}=2V* I_C=1A, V_{CE}=2V* I_C=3A, V_{CE}=2V* I_C=5A, V_{CE}=2V*
Transition Frequency	f_T		180		MHz	I_C=50mA, V_{CE}=10V f=100MHz
Output Capacitance	C_{obo}		15		pF	V_{CB}=10V, f=1MHz
Turn-On Time Turn-Off Time	$t_{(on)}$ $t_{(off)}$		50 250		ns ns	I_C=1A, V_{CC}=10V I_{B1}=I_{B2}=100mA

* Measured under pulsed conditions. Pulse width=300μs. Duty cycle ≤ 2%

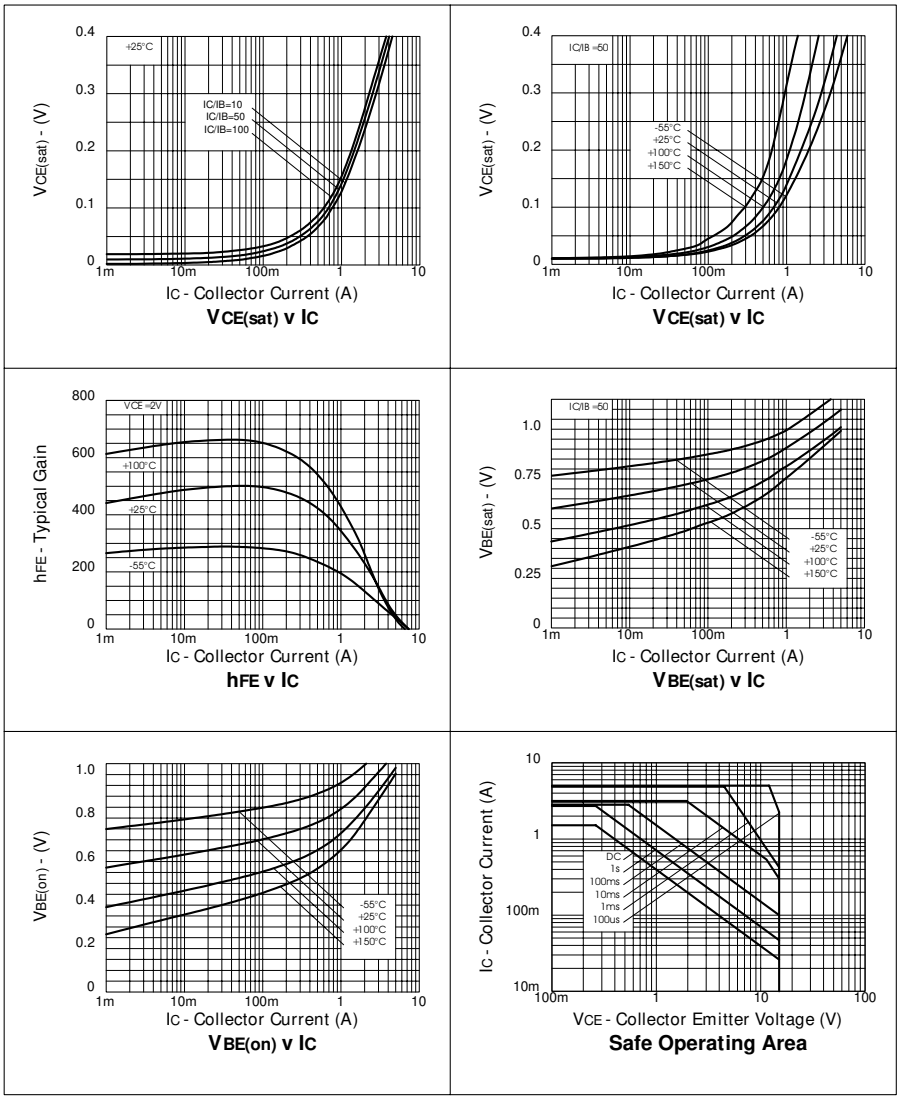
ZXTD6717E6

PNP TRANSISTOR
ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated).

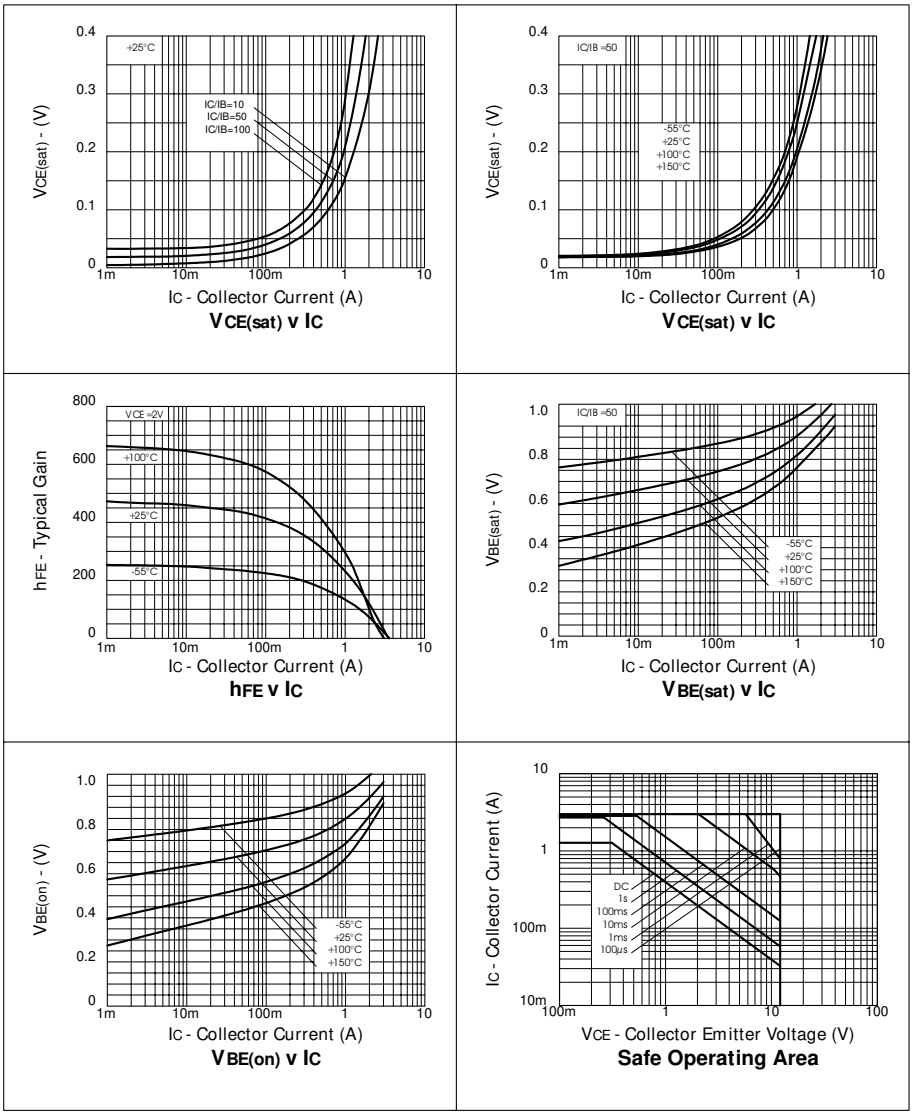
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-12			V	I_C=-100μA
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-12			V	I_C=-10mA*
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5			V	I_E=-100μA
Collector Cut-Off Current	I_{CBO}			-10	nA	V_{CB}=-10V
Emitter Cut-Off Current	I_{EBO}			-10	nA	V_{EB}=-4V
Collector Emitter Cut-Off Current	I_{CES}			-10	nA	V_{CES}=-10V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-25 -55 -110 -160 -185	-40 -100 -175 -215 -240	mV mV mV mV mV	I_C=-100mA, I_B=-10mA* I_C=-250mA, I_B=-10mA* I_C=-500mA, I_B=-10mA* I_C=-1A, I_B=-50mA* I_C=-1.25A, I_B=-100mA*
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-0.99	-1.10	V	I_C=-1.25A, I_B=-100mA*
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-0.85	-1.0	V	I_C=-1.25A, V_{CE}=-2V*
Static Forward Current Transfer Ratio	h_{FE}	300 300 200 125 75 30	490 450 340 250 140 80			I_C=-10mA, V_{CE}=-2V* I_C=-100mA, V_{CE}=-2V* I_C=-500mA, V_{CE}=-2V* I_C=-1.25A, V_{CE}=-2V* I_C=-2A, V_{CE}=-2V* I_C=-3A, V_{CE}=-2V*
Transition Frequency	f_T		220		MHz	I_C=-50mA, V_{CE}=-10V f=100MHz
Output Capacitance	C_{obo}		15		pF	V_{CB}=-10V, f=1MHz
Turn-On Time Turn-Off Time	$t_{(on)}$ $t_{(off)}$		50 135		ns ns	I_C=-1A, V_{CC}=-10V I_{B1}=I_{B2}=-100mA

* Measured under pulsed conditions. Pulse width=300μs. Duty cycle ≤ 2%

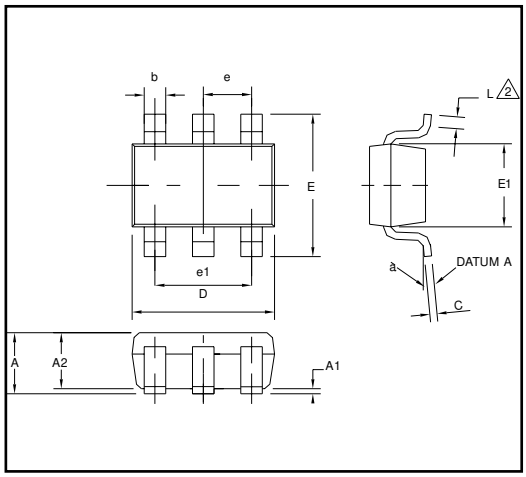
NPN TYPICAL CHARACTERISTICS



PNP TYPICAL CHARACTERISTICS

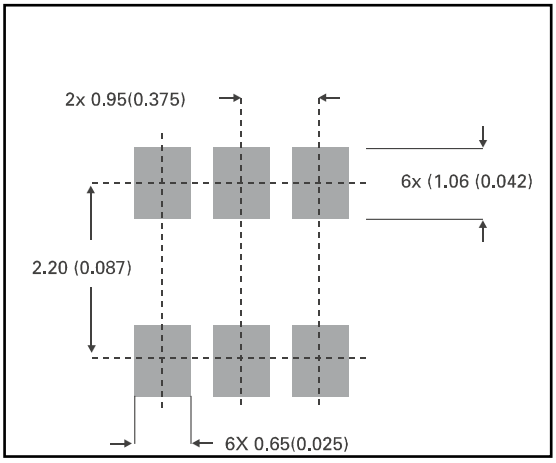


PACKAGE DIMENSIONS



DIM	Millimetres		Inches	
	Min	Max	Min	Max
A	0.90	1.45	0.35	0.057
A1	0.00	0.15	0	0.006
A2	0.90	1.30	0.035	0.051
b	0.35	0.50	0.014	0.019
C	0.09	0.20	0.0035	0.008
D	2.80	3.00	0.110	0.118
E	2.60	3.00	0.102	0.118
E1	1.50	1.75	0.059	0.069
L	0.10	0.60	0.004	0.002
e	0.95 REF		0.037 REF	
e1	1.90 REF		0.074 REF	
L	0°	10°	0°	10°

PAD LAYOUT DETAILS



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