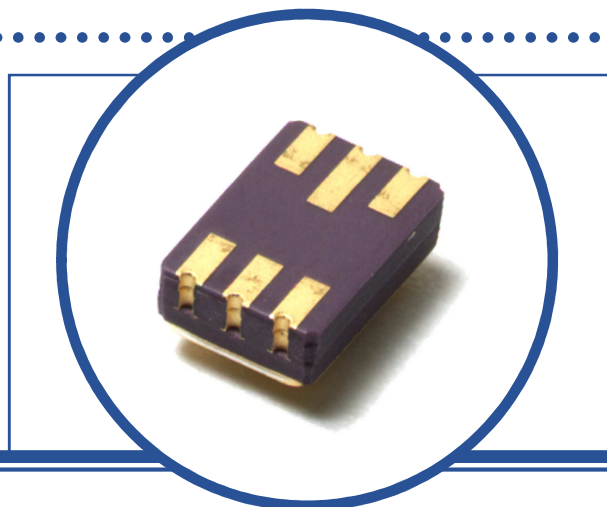


COMPLEMENTARY SILICON PLANAR EPITAXIAL NPN/PNP TRANSISTOR

ZTX653/ZTX753DCSM

- Complimentary Silicon Planar NPN/PNP Transistors
- Hermetic Ceramic Surface Mounted Package.
- Hi-Rel Screening Options Available



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise stated)

		ZTX653	ZTX753
V_{CBO}	Collector – Base Voltage	120V	-120V
V_{CEO}	Collector – Emitter Voltage	100V	-100V
V_{EBO}	Emitter – Base Voltage	5V	-5V
I_C	Continuous Collector Current	2A	-2A
I_B	Base Current	2A	-2A
P_D	Total Power Dissipation at $T_A = 25^\circ\text{C}$ Derate Above 25°C	1.0W 8mW/ $^\circ\text{C}$	
T_J	Junction Temperature Range	-55 to $+150^\circ\text{C}$	
T_{stg}	Storage Temperature Range	-55 to $+150^\circ\text{C}$	

THERMAL PROPERTIES (Each Device)

Symbols	Parameters	Max.	Units
$R_{\theta JA}$	Thermal Resistance, Junction To Ambient	125	$^\circ\text{C/W}$

Semelab Limited reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

SILICON PLANAR EPITAXIAL NPN/PNP TRANSISTORS ZTX653/ZTX753DCSM

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise stated)

Symbols	Parameters	Test Conditions	Min.	Typ.	Max.	Units
V _{(BR)CBO} ⁽¹⁾	Collector-Base Breakdown Voltage	I _C = 100μA ZTX653	120			V
		I _C = -100μA ZTX753	-120			
V _{(BR)CEO} ⁽¹⁾	Collector-Emitter Breakdown Voltage	I _C = 10mA ZTX653	100			
		I _C = -10mA ZTX753	-100			
V _{(BR)EBO} ⁽¹⁾	Emitter-Base Breakdown Voltage	I _E = 100μA ZTX653	5			
		I _E = -100μA ZTX753	-5			
I _{CBO} ⁽¹⁾	Collector-Base Cut-off Current	V _{CB} = 100V ZTX653 T _C = 100°C			0.1	μA
		V _{CB} = -100V ZTX753 T _C = 100°C			-0.1	
		V _{CB} = -100V ZTX753 T _C = 100°C			-10	
I _{EBO} ⁽¹⁾	Emitter-Base Cut-off Current	V _{EB} = 4V ZTX653			0.1	
		V _{EB} = -4V ZTX753			-0.1	
V _{CE(sat)} ⁽¹⁾	Collector-Emitter Saturation Voltage	I _C = 500mA I _B = 50mA ZTX653		0.2	0.3	V
		I _C = -500mA I _B = -50mA ZTX753		-0.2	-0.3	
		I _C = 1.0A I _B = 100mA ZTX653		0.35	0.5	
		I _C = -1.0A I _B = -100mA ZTX753		-0.35	-0.5	
		I _C = 2A I _B = 200mA ZTX653		0.8	1.0	
		I _C = -2A I _B = -200mA ZTX753		-0.8	-1.0	
V _{BE(sat)} ⁽¹⁾	Base-Emitter Saturation Voltage	I _C = 1.0A I _B = 100mA ZTX653		1.0	1.3	
		I _C = -1.0A I _B = -100mA ZTX753		-1.0	-1.3	
V _{BE(on)} ⁽¹⁾	Base-Emitter Turn-On Voltage	I _C = 1.0A V _{CE} = 2V ZTX653		0.95	1.2	
		I _C = 1.0A V _{CE} = 2V ZTX753		-0.95	-1.2	

Table continued on the next page

SILICON PLANAR EPITAXIAL NPN/PNP TRANSISTORS ZTX653/ZTX753DCSM

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise stated) Continued

Symbols	Parameters	Test Conditions	Min.	Typ.	Max.	Units	
h _{FE} ⁽¹⁾	DC Current Gain	I _C = 50mA V _{CE} = 2V ZTX653	70	200		-	
		I _C = -50mA V _{CE} = -2V ZTX753					
		I _C = 500mA V _{CE} = 2V ZTX653	100	200			300
		I _C = -500mA V _{CE} = -2V ZTX753					
		I _C = 1.0A V _{CE} = 2V ZTX653	55	110			
		I _C = -1.0A V _{CE} = -2V ZTX753					
		I _C = 2A V _{CE} = 2V ZTX653	25	55			
		I _C = -2A V _{CE} = -2V ZTX753					

DYNAMIC CHARACTERISTICS

Symbols	Parameters	Test Conditions	Min.	Typ.	Max.	Units
f _T	Transition Frequency	I _C = 100mA f = 100MHz V _{CE} = 5V ZTX653	140	175		MHz
		I _C = -100mA f = 100MHz V _{CE} = -5V ZTX753				
C _{obo}	Output Capacitance	I _E = 0 f = 1.0MHz V _{CB} = 10V ZTX653			30	pF
		I _E = 0 f = 1.0MHz V _{CB} = -10V ZTX753				
T _{on}	Turn-On Time	I _C = 500mA V _{CC} = 10V ZTX653		80		ns
		I _C = -500mA V _{CC} = -10V ZTX753				
T _{off}	Turn-Off Time	I _{B1} = I _{B2} = 50mA ZTX653		1200		
		I _{B1} = I _{B2} = -50mA ZTX753				

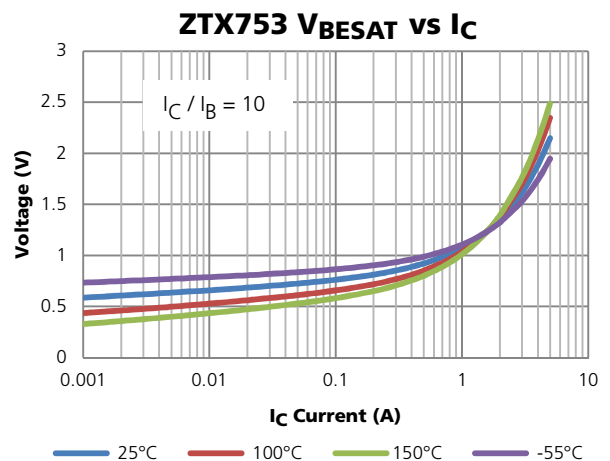
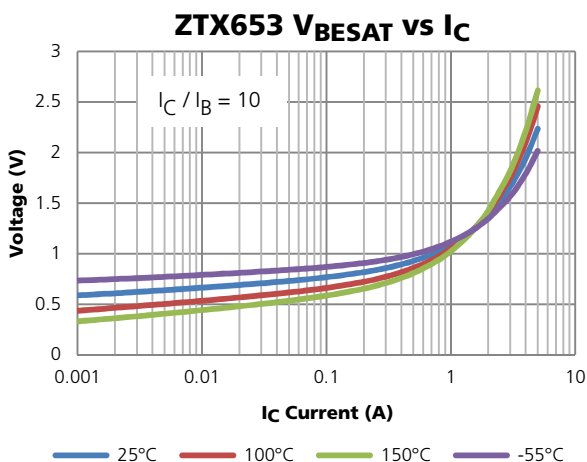
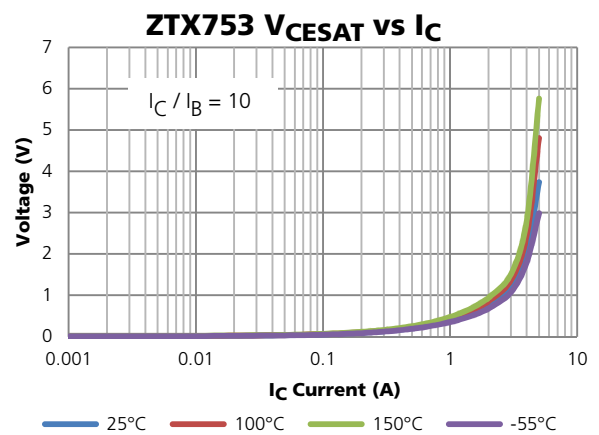
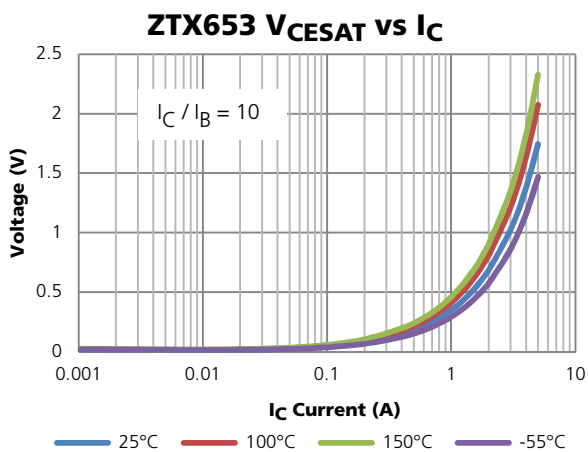
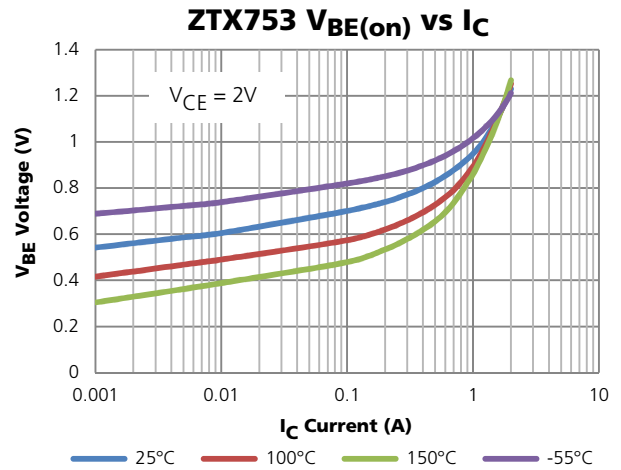
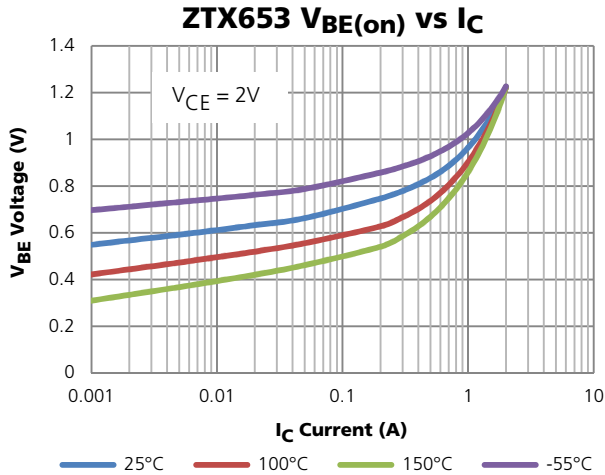
Notes

(1) Pulse Width ≤ 380us, δ ≤ 2%

SILICON PLANAR EPITAXIAL NPN/PNP TRANSISTORS ZTX653/ZTX753DCSM



TYPICAL DEVICE CHARACTERISTICS

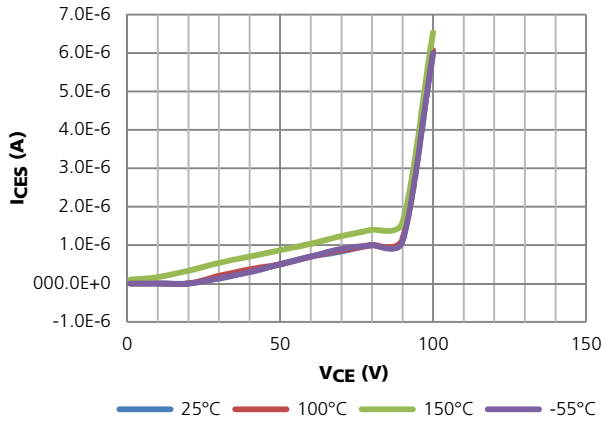


SILICON PLANAR EPITAXIAL NPN/PNP TRANSISTORS ZTX653/ZTX753DCSM

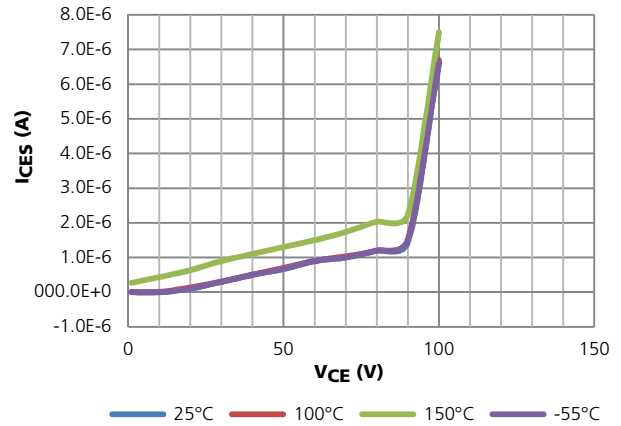


TYPICAL DEVICE CHARACTERISTICS (Continued)

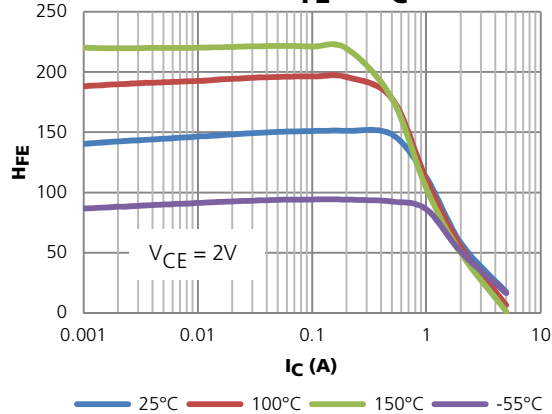
ZTX653 I_{CES} vs V_{CE}



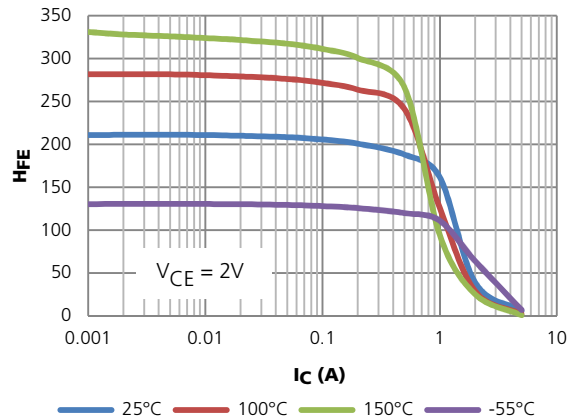
ZTX753 I_{CES} vs V_{CE}



ZTX653 H_{FE} vs I_C



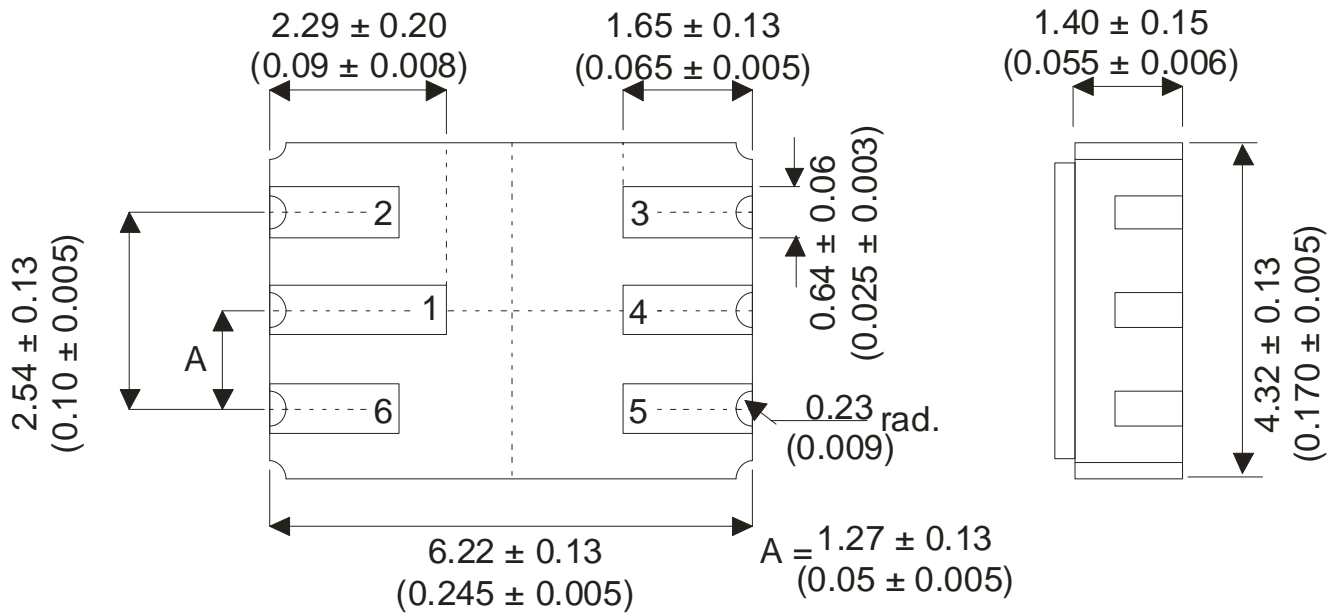
ZTX753 H_{FE} vs I_C



SILICON PLANAR EPITAXIAL NPN/PNP TRANSISTORS ZTX653/ZTX753DCSM

MECHANICAL DATA

Dimensions in mm (inches)



LCC2 (MO-041BB)

Underside View

- | | |
|---------------------|---------------------|
| Pad 1 – Collector 1 | Pad 4 – Collector 2 |
| Pad 2 – Base 1 | Pad 5 – Emitter 2 |
| Pad 3 – Base 2 | Pad 6 – Emitter 1 |

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