



A Product Line of Diodes Incorporated

ZXTC6719MC

DUAL 50V NPN & 40V PNP LOW SATURATION TRANSISTOR COMBINATION

Features and Benefits

NPN Transistor

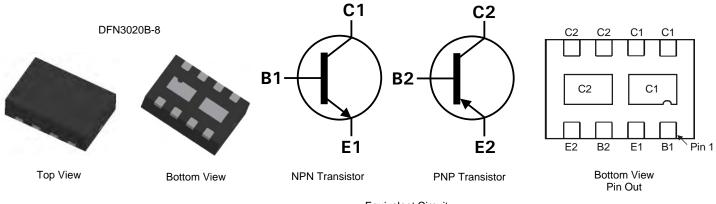
- BV_{CEO} > 50V
- I_C = 4A Continuous Collector Current
- Low Saturation Voltage (100mV max @ 1A)
- $R_{SAT} = 68m\Omega$ for a low equivalent On-Resistance PNP Transistor
 - BV_{CEO} > -40V
 - I_C = -3A Continuous Collector Current
 - Low Saturation Voltage (-220mV max @ -1A)
 - $R_{SAT} = 104m\Omega$ for a low equivalent On-Resistance
 - h_{FE} characterized up to 6A for high current gain hold up
- Low profile 0.8mm high package for thin applications
- $R_{\theta JA}$ efficient, 40% lower than SOT26
- 6mm² footprint, 50% smaller than TSOP6 and SOT26
- Lead-Free, RoHS Compliant (Note 1)
- Halogen and Antimony Free. "Green" Device (Note 2)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

- Case: DFN3020B-8
- Case material: Molded Plastic. "Green" Molding Compound.
- Terminals: Pre-Plated NiPdAu leadframe.
- Nominal package height: 0.8mm
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Weight: 0.013 grams (approximate)

Applications

- DC DC Converters
- Charging circuits
- Power switches
- Motor control
- CCFL Backlighting circuits
- Portable applications



Equivalent Circuit

Ordering Information (Note 3)

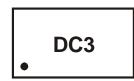
Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTC6719MCTA	DC3	7	8	3000

Notes: 1. No purposefully added lead.

2. Diodes Inc's "Green" Policy can be found on our website at http://www.diodes.com

3. For Packaging Details, go to our website at http://www.diodes.com.

Marking Information



DC3 = Product type Marking Code Dot denotes Pin 1



Maximum Ratings @ T_A = 25°C unless otherwise specified

Parameter	Symbol	NPN	PNP	Unit		
Collector-Base Voltage		V _{CBO}	100	-50		
Collector-Emitter Voltage		V _{CEO}	50	-40	V	
Emitter-Base Voltage		V _{EBO}	7	-7		
Peak Pulse Current		I _{CM}	6	-4		
Continuous Collector Current	(Notes 4 & 7)		4	-3	^	
Continuous Collector Current	(Notes 5 & 7)	IC	4.5	-3.5	A	
Base Current		I _B		1		

Thermal Characteristics @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	NPN PN		Unit	
	(Notes 4 & 7)		1.5 12 2.45 19.6 1.13 8 1.7 13.6		W mW/°C
Power Dissipation	(Notes 5 & 7)				
Linear Derating Factor	(Notes 6 & 7)	P _D			
	(Notes 6 & 8)				
	(Notes 4 & 7)		83.3 51.0		-
Thermal Desistance Junction to Ambient	(Notes 5 & 7)	5			
Thermal Resistance, Junction to Ambient	(Notes 6 & 7)	R _{0JA}	11	11	°C/W
	(Notes 6 & 8)		73.5		
Thermal Resistance, Junction to Lead	(Notes 7 & 9)	R _{θJL}	17	' .1]
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150		°C

Notes: 4. For a dual device surface mounted on 28mm x 28mm (8cm²) FR4 PCB with high coverage of single sided 2 oz copper, in still air conditions; the device is measured when operating in a steady-state condition. The heatsink is split in half with the exposed collector pads connected to each half.

5. Same as note (3), except the device is measured at t <5 sec.

6. Same as note (3), except the device is surface mounted on 31mm x 31mm (10cm²) FR4 PCB with high coverage of single sided 1oz copper.

7. For a dual device with one active die.

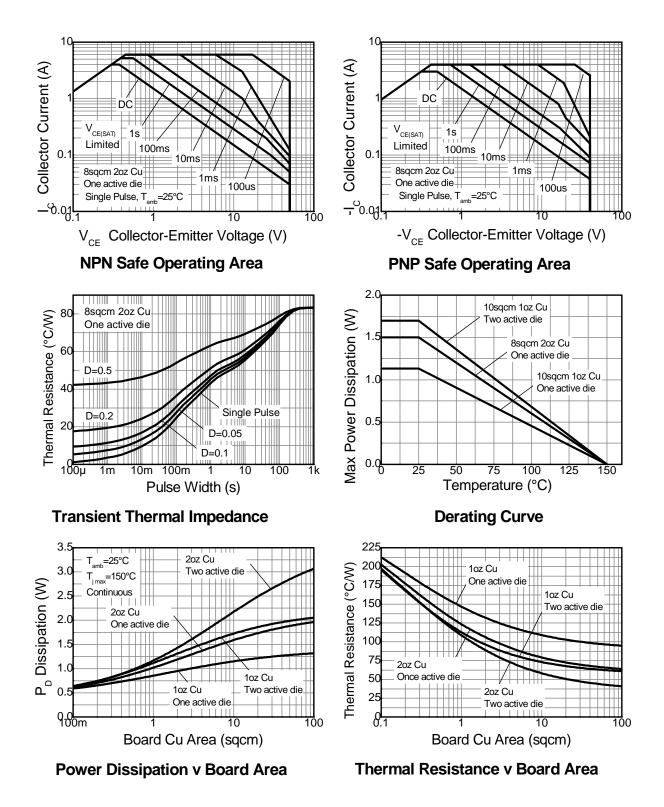
8. For dual device with 2 active die running at equal power.

9. Thermal resistance from junction to solder-point (at the end of the collector lead).





Thermal Characteristics





NPN - Electrical Characteristics @ T_A = 25°C unless otherwise specified

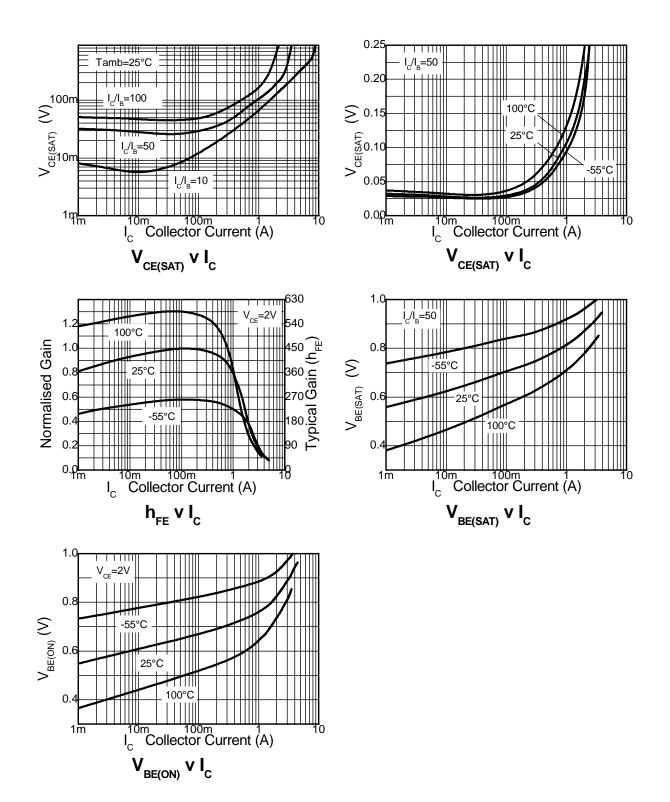
Characteristic	Cumhal	Min	True	Max	11	Test Condition
Characteristic	Symbol	Min	Тур	Max	Unit	
Collector-Base Breakdown Voltage	V _{(BR)CBO}	100	190	-	V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 10)	V _{(BR)CEO}	50	65	-	V	$I_{\rm C} = 10 {\rm mA}$
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	7	8.2	-	V	I _E = 100μA
Collector Cutoff Current	I _{CBO}	-	-	100	nA	$V_{CB} = 80V$
Emitter Cutoff Current	I _{EBO}	-	-	100	. nA	$V_{EB} = 6V$
Collector Emitter Cutoff Current	I _{CES}	-	-	100	nA	$V_{CES} = 40V$
Static Forward Current Transfer Ratio (Note 10)	h _{FE}	200 300 200 100 -	400 450 400 225 40	- - - -	-	$\begin{split} I_{C} &= 10 \text{mA}, \ V_{CE} = 2 \text{V} \\ I_{C} &= 200 \text{mA}, \ V_{CE} = 2 \text{V} \\ I_{C} &= 1 \text{A}, \ V_{CE} = 2 \text{V} \\ I_{C} &= 2 \text{A}, \ V_{CE} = 2 \text{V} \\ I_{C} &= 6 \text{A}, \ V_{CE} = 2 \text{V} \end{split}$
Collector-Emitter Saturation Voltage (Note 10)	V _{CE(sat)}	- - - - -	10 145 70 115 225 270	20 200 100 220 300 320	mV	$\begin{split} I_{C} &= 0.1A, \ I_{B} = 10 mA \\ I_{C} &= 1A, \ I_{B} = 10 mA \\ I_{C} &= 1A, \ I_{B} = 50 mA \\ I_{C} &= 2A, \ I_{B} = 50 mA \\ I_{C} &= 3A, \ I_{B} = 100 mA \\ I_{C} &= 4A, \ I_{B} = 200 mA \end{split}$
Base-Emitter Turn-On Voltage (Note 10)	V _{BE(on)}	-	0.94	1.00	V	$I_C = 4A, V_{CE} = 2V$
Base-Emitter Saturation Voltage (Note 10)	V _{BE(sat)}	-	1.00	1.07	V	$I_{\rm C} = 4$ A, $I_{\rm B} = 200$ mA
Output Capacitance	C _{obo}	-	12	20	pF	V _{CB} = 10V. f = 1MHz
Transition Frequency	fT	100	165	-	MHz	$V_{CE} = 10V, I_C = 50mA, f = 100MHz$
Turn-on Time	t _{on}	-	170	-	ns	$V_{CC} = 10V, I_{C} = 1A$
Turn-off Time	t _{off}	-	750	-	ns	$I_{B1} = I_{B2} = 10 \text{mA}$

Notes: 10. Measured under pulsed conditions. Pulse width \leq 300 $\mu s.$ Duty cycle $\leq~2\%$





NPN – Typical Electrical Characteristics



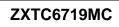


PNP - Electrical Characteristics @T_A = 25°C unless otherwise specified

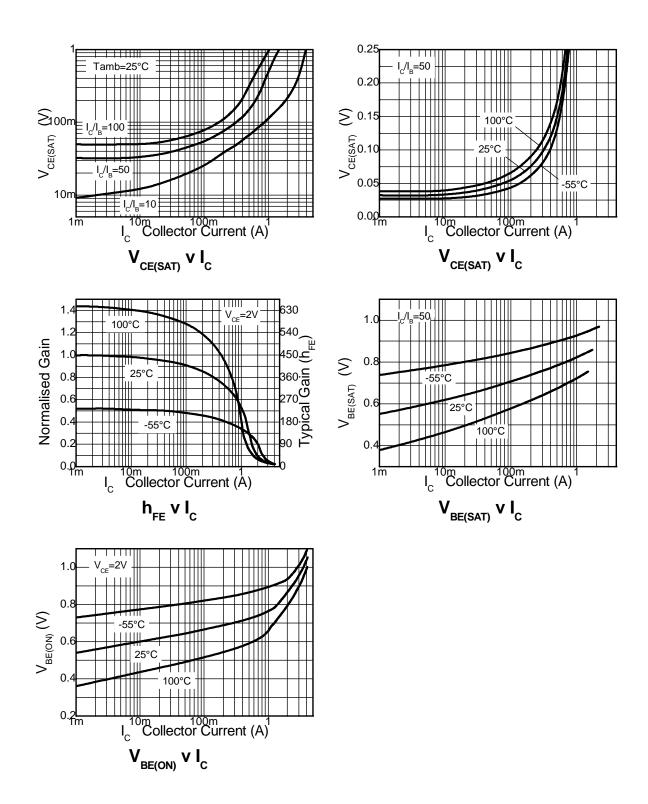
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	V _{(BR)CBO}	-50	-80	-	V	I _C = -100μA
Collector-Emitter Breakdown Voltage (Note 11)	V _{(BR)CEO}	-40	-70	-	V	I _C = -10mA
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	-7	-8.5	-	V	I _E = -100μA
Collector Cutoff Current	I _{CBO}	-	-	-100	nA	$V_{CB} = -40V$
Emitter Cutoff Current	I _{EBO}	-	-	-100	. nA	V _{EB} = -6V
Collector Emitter Cutoff Current	I _{CES}	-	-	-100	nA	V _{CES} = -32V
Static Forward Current Transfer Ratio (Note 11)	hfe	300 300 180 60 12	480 450 290 130 22	- - - -	-	$\begin{split} I_{C} &= -10 \text{mA}, \ V_{CE} &= -2 \text{V} \\ I_{C} &= -100 \text{mA}, \ V_{CE} &= -2 \text{V} \\ I_{C} &= -1A, \ V_{CE} &= -2 \text{V} \\ I_{C} &= -1.5A, \ V_{CE} &= -2 \text{V} \\ I_{C} &= -3A, \ V_{CE} &= -2 \text{V} \end{split}$
Collector-Emitter Saturation Voltage (Note 11)	V _{CE(sat)}		-25 -150 -195 -210 -260	-40 -220 -300 -300 -370	mV	$\begin{split} I_{C} &= -0.1A, \ I_{B} &= -10 \text{mA} \\ I_{C} &= -1A, \ I_{B} &= -50 \text{mA} \\ I_{C} &= -1.5A, \ I_{B} &= -100 \text{mA} \\ I_{C} &= -2A, \ I_{B} &= -200 \text{mA} \\ I_{C} &= -2.5A, \ I_{B} &= -250 \text{mA} \end{split}$
Base-Emitter Turn-On Voltage (Note 11)	V _{BE(on)}	-	-0.89	-0.95	V	I _C = -2.5A, V _{CE} = -2V
Base-Emitter Saturation Voltage (Note 11)	V _{BE(sat)}	-	-0.97	-1.05	V	I _C = -2.5A, I _B = -250mA
Output Capacitance	C _{obo}	-	19	25	pF	V _{CB} = -10V. f = 1MHz
Transition Frequency	f _T	150	190	-	MHz	$V_{CE} = -10V, I_C = -50mA, f = 100MHz$
Turn-on Time	t _{on}	-	40	-	ns	$V_{CC} = -15V, I_{C} = -0.75A$
Turn-off Time	t _{off}	-	435	-	ns	$I_{B1} = I_{B2} = -10 \text{mA}$

Notes: 11. Measured under pulsed conditions. Pulse width \leq 300µs. Duty cycle \leq 2%.

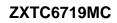




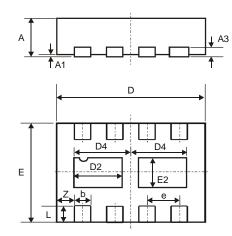
PNP – Typical Electrical Characteristics





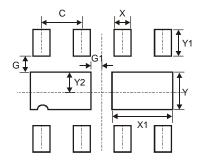


Package Outline Dimensions



	DFN3020B-8						
Dim	Min	Max	Тур				
Α	0.77	0.83	0.80				
A1	0	0.05	0.02				
A3	-	-	0.15				
b	0.25	0.35	0.30				
D	2.95	3.075	3.00				
D2	0.82	1.02	0.92				
D4	1.01	1.21	1.11				
е	-	-	0.65				
Е	1.95	2.075	2.00				
E2	0.43	0.63	0.53				
L	0.25	0.35	0.30				
Z	-	-	0.375				
All I	All Dimensions in mm						

Suggested Pad Layout



Dimensions	Value (in mm)
С	0.650
G	0.285
G1	0.090
Х	0.400
X1	1.120
Y	0.730
Y1	0.500
Y2	0.365



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