



YOUSHANG SEMICONDUCTOR

设计研发新型功率器件

各类小信号开关

中低压及高压大电流等场效应管

0755-83047638

ysbdt@szyoushang.cn

www.szyoushang.cn



企业微信二维码



企业QQ二维码

Features

- $BV_{CEO} > -40V$
- Small Form Factor Thermally Efficient Package. Enables Higher Density End Products
- $I_C = -2A$ Continuous Collector Current
- $I_{CM} = -3A$ Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)} < -225mV @ -1A$
- Complementary NPN Type: NK-DXTN22040CFGQ
- Rated to $+175^{\circ}C$ – Ideal For High Temperature Environment
- Wettable Flank For Improved Optical Inspection

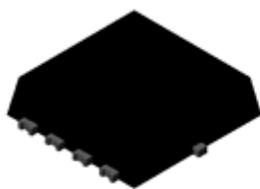
Mechanical Data

- Case: PowerDI[®] 3333-8
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads Solderable per MIL-STD-202, Method 208 
- Weight: 0.03 grams (Approximate)

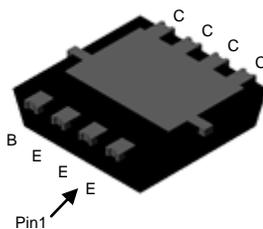
Applications

- High-Side Switch
- Supply Line Switching
- Motor Driving

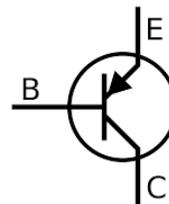
PowerDI3333-8 (SWP) (Type UX)



Top View



Bottom View



Device Symbol

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-7	V
Continuous Collector Current	I_C	-2	A
Peak Pulse Collector Current	I_{CM}	-3	
Continuous Base Current	I_B	-100	mA
Peak Pulse Base Current	I_{BM}	-200	

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

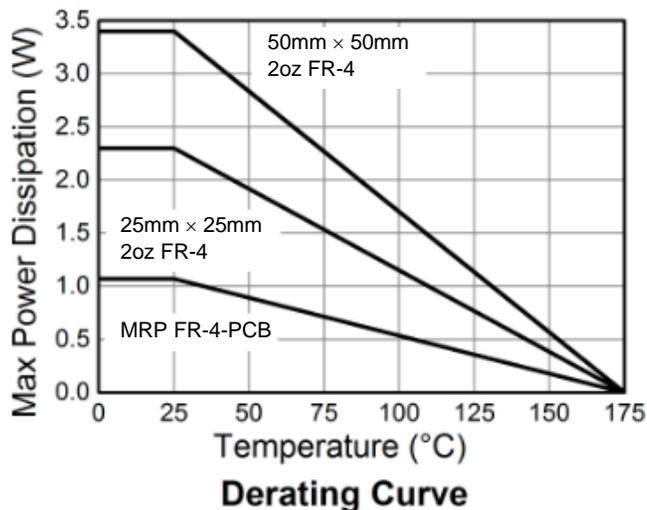
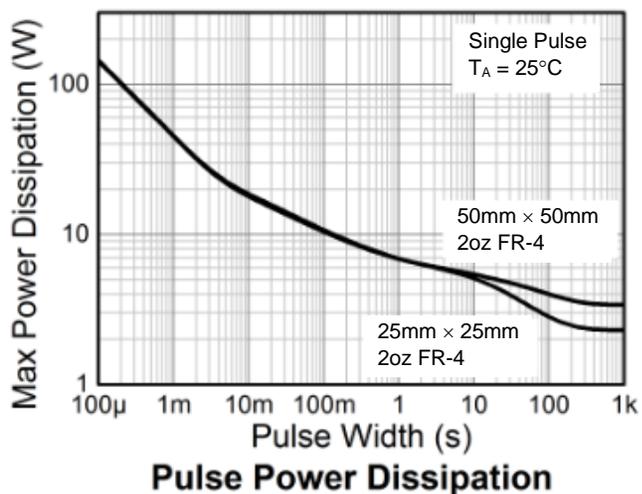
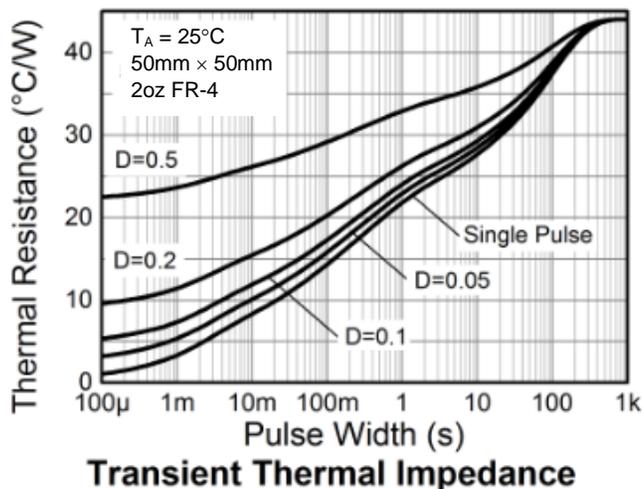
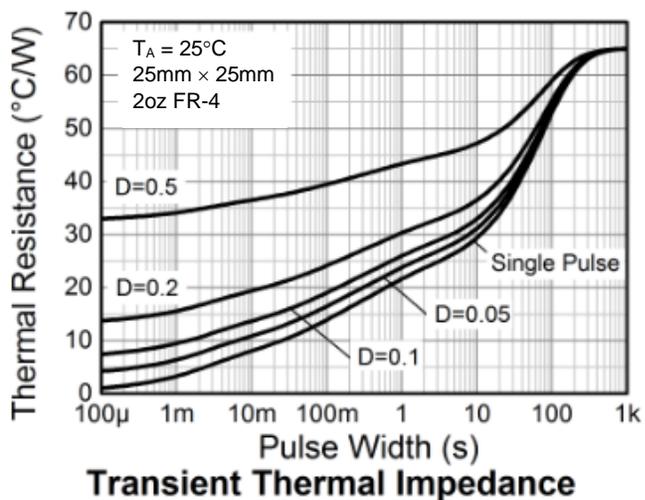
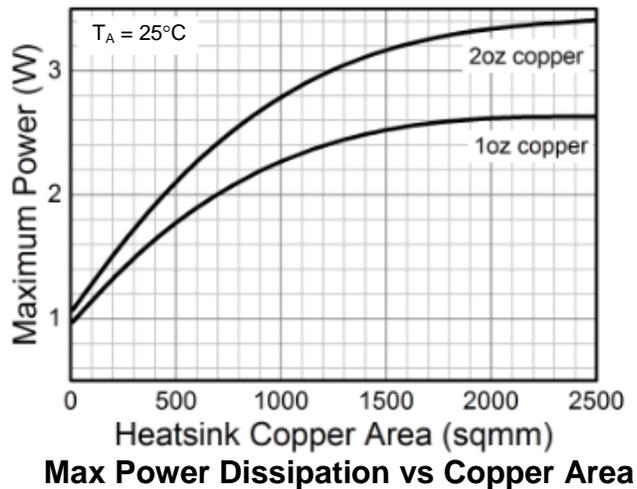
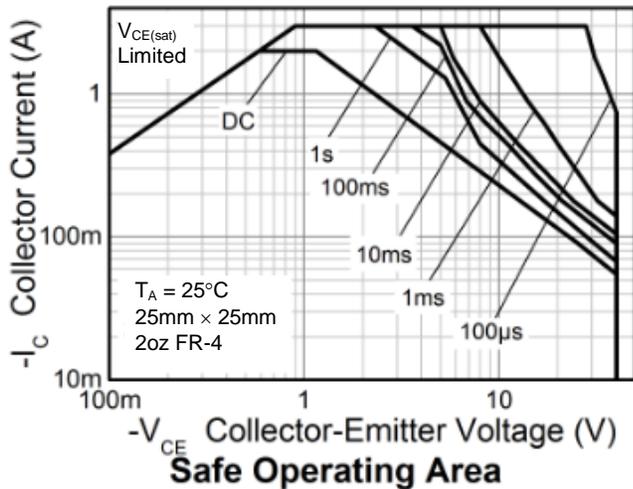
Characteristic	Symbol	Value	Unit
Power Dissipation	P_D	1.07	W
		2.3	W
		3.4	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	140	$^\circ\text{C/W}$
		65	$^\circ\text{C/W}$
		44	$^\circ\text{C/W}$
Thermal Resistance, Junction to Leads (Note 8)	$R_{\theta JL}$	11	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +175	$^\circ\text{C}$

ESD Ratings (Note 9)

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 mounted with the collector tab on MRP FR4-PCB; device is measured under still air conditions whilst operating in a steady-state.
 6. Same as Note 5, except the device is mounted on 25mm × 25mm 2oz copper.
 7. Same as Note 5, except the device is mounted on 50mm × 50mm 2oz copper.
 8. Thermal resistance from junction to solder-point (at the collector tab).
 9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information

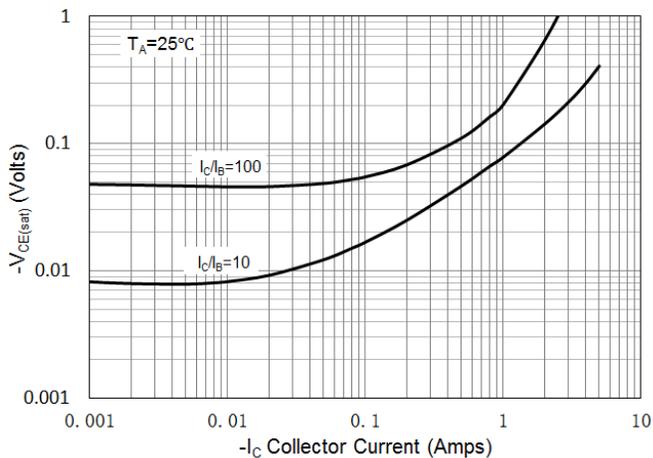


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

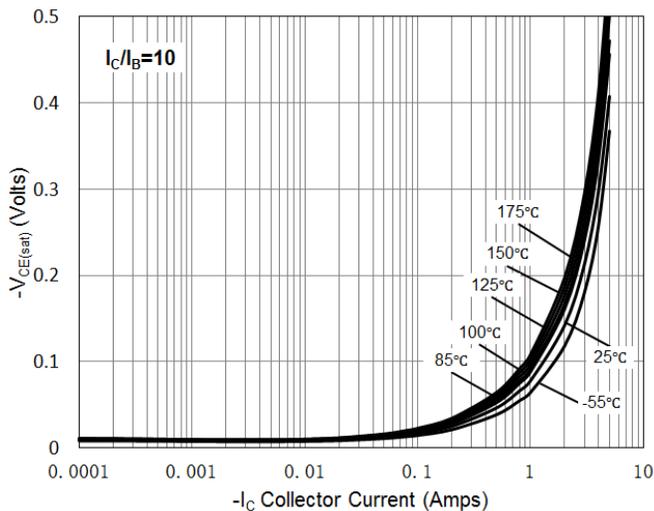
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	-50	-71	—	V	I _C = -100μA
Collector-Emitter Breakdown Voltage (Note 10)	BV _{CEO}	-40	-50	—	V	I _C = -10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	-7	-8.6	—	V	I _E = -100μA
Collector-Base Cut-Off Current	I _{CBO}	—	-1 -0.1	-20 -10	nA μA	V _{CB} = -50V V _{CB} = -40V, T _A = +150°C
Emitter-Base Cut-Off Current	I _{EBO}	—	-1	-20	nA	V _{EB} = -6V
Collector-Emitter Cut-Off Current	I _{CES}	—	-1	-20	nA	V _{CE} = -40V, V _{BE} = 0V
Static Forward Current Transfer Ratio (Note 10)	h _{FE}	200 200 150 80	340 299 261 196	— 600 — —	—	I _C = -100mA, V _{CE} = -2V I _C = -500mA, V _{CE} = -2V I _C = -1A, V _{CE} = -2V I _C = -2A, V _{CE} = -2V
Collector-Emitter Saturation Voltage (Note 10)	V _{CE(sat)}	—	-52 -42 -71 -129 -189	-100 -130 -225 -350 -600	mV	I _C = -100mA, I _B = -1mA I _C = -500mA, I _B = -50mA I _C = -1A, I _B = -100mA I _C = -2A, I _B = -200mA I _C = -3A, I _B = -300mA
Collector-Emitter Saturation Resistance (Note 10)	R _{CE(sat)}	—	—	225	mΩ	I _C = -1A, I _B = -100mA
Base-Emitter Saturation Voltage (Note 10)	V _{BE(sat)}	—	-0.88	-1	V	I _C = -1A, I _B = -100mA
Base-Emitter Turn-On Voltage (Note 10)	V _{BE(on)}	—	-0.77	-0.9	V	I _C = -1A, V _{CE} = -2V
Transition Frequency	f _T	—	120	—	MHz	I _C = -50mA, V _{CE} = -10V f = 100MHz
Output Capacitance	C _{obo}	—	12	—	pF	V _{CB} = -10V, f = 1MHz
Switching Characteristics	t _{delay}	—	11.6	—	ns	V _{CC} = -10V, I _C = -500mA I _{B1} = -I _{B2} = -50mA
	t _{rise}	—	128	—	ns	
	t _{storage}	—	524	—	ns	
	t _{fall}	—	69.4	—	ns	

Note: 10. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

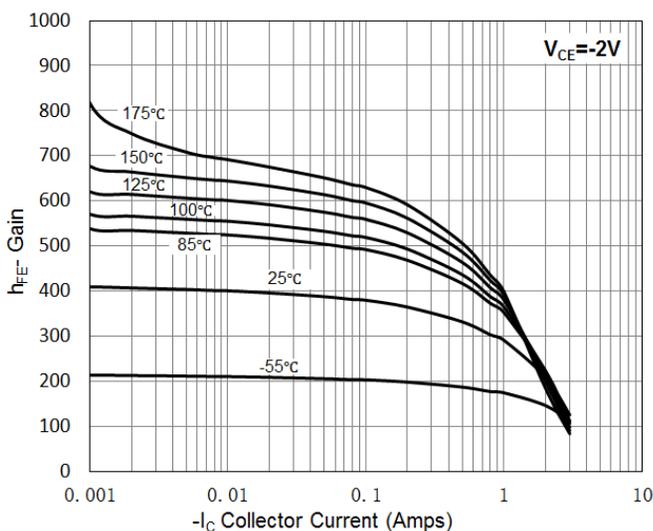
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



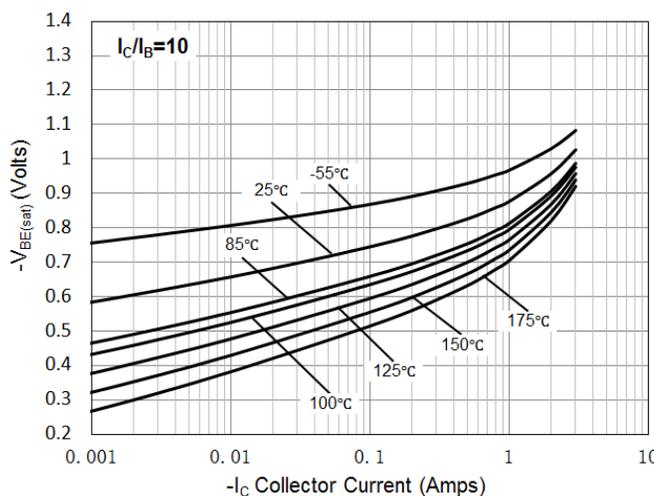
$V_{CE(sat)}$ vs I_C



$V_{CE(sat)}$ vs I_C

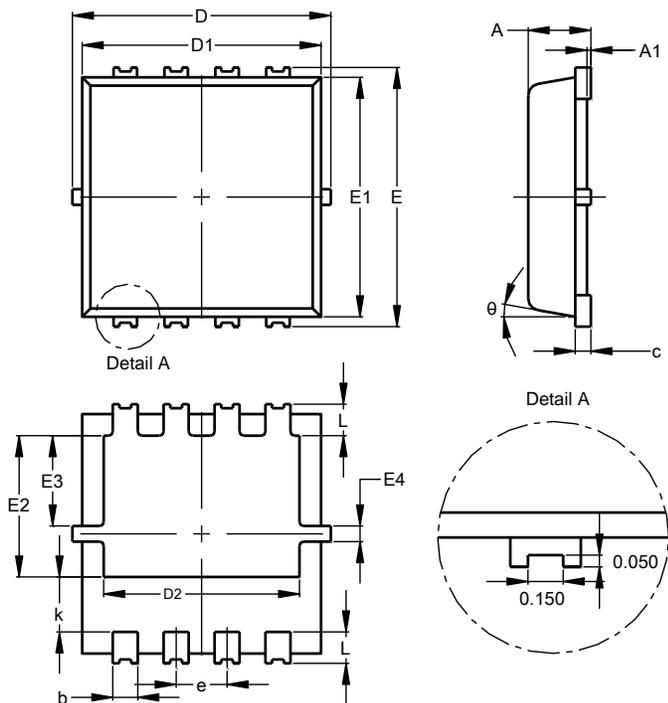


h_{FE} vs I_C



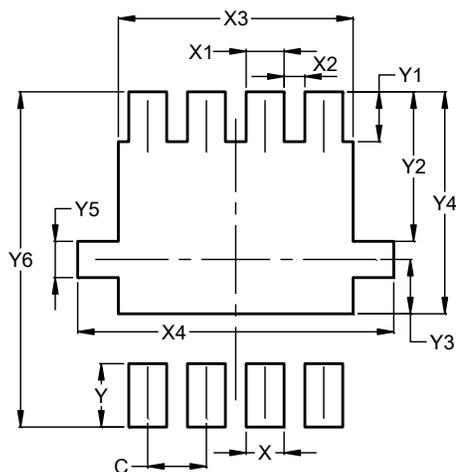
$V_{BE(sat)}$ vs I_C

Package Outline Dimensions

PowerDI3333-8 (SWP) (Type UX)


PowerDI3333-8 (SWP) (Type UX)			
Dim	Min	Max	Typ
A	0.75	0.85	0.80
A1	0.00	0.05	--
b	0.25	0.40	0.32
c	0.10	0.25	0.15
D	3.20	3.40	3.30
D1	2.95	3.15	3.05
D2	2.30	2.70	2.50
E	3.20	3.40	3.30
E1	2.95	3.15	3.05
E2	1.60	2.00	1.80
E3	0.95	1.35	1.15
E4	0.10	0.30	0.20
e	--	--	0.65
k	0.50	0.90	0.70
L	0.30	0.50	0.40
θ	0°	12°	10°
All Dimensions in mm			

Suggested Pad Layout

PowerDI3333-8 (SWP) (Type UX)


Dimensions	Value (in mm)
C	0.650
X	0.420
X1	0.420
X2	0.230
X3	2.600
X4	3.500
Y	0.700
Y1	0.550
Y2	1.650
Y3	0.600
Y4	2.450
Y5	0.400
Y6	3.700