优尚

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

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企业微信二维码

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Features

- BV_{CEO} > 100V
- Small Form Factor Thermally Efficient Package. Enables Higher Density End Products
- I_C = 2A High Continuous Current
- I_{CM} = 6A Peak Pulse Current
- Low Saturation Voltage $V_{CE(SAT)}$ < 250mV @ 1A
- Complementary PNP Type: NK-DXTP07100BFG
- Rated to +175°C–Ideal for High Temperature Environment
- Wettable Flank for Improved Optical Inspection

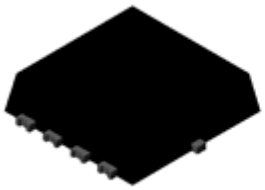
Mechanical Data

- 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 Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.03 grams (Approximate)

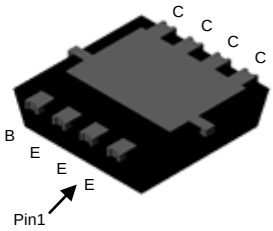
Applications

- Load Switch
- Linear Regulator
- MOSFET or IGBT Gate Driving

PowerDI3333-8 (SWP) (Type UX)

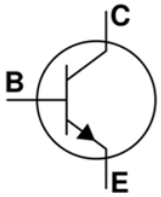


Top View



Bottom View

Equivalent Circuit



Device Symbol

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	120	V
Collector-Emitter Voltage	V_{CEO}	100	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	2	A
Peak Pulse Current	I_{CM}	6	A

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

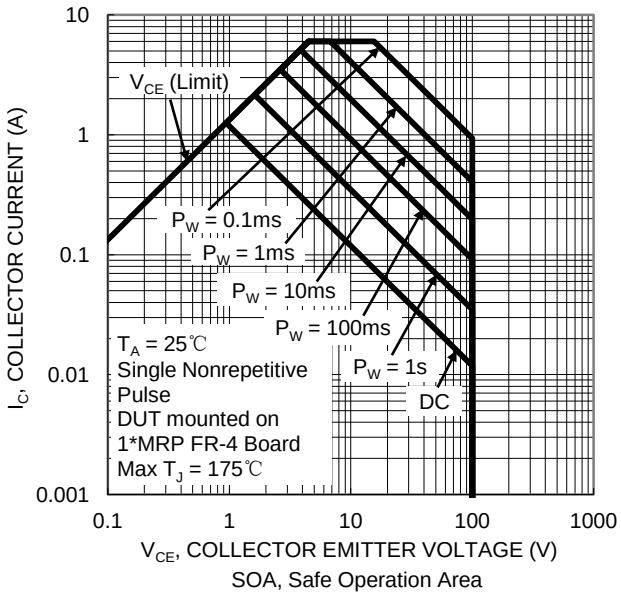
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	0.9	W
	(Note 6)		2.1	W
	(Note 7)		3.1	W
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	140	°C/W
	(Note 6)		65	°C/W
	(Note 7)		44	°C/W
Thermal Resistance, Junction to Leads (Note 8)		$R_{\theta JL}$	8.5	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +175	°C

ESD Ratings (Note 9)

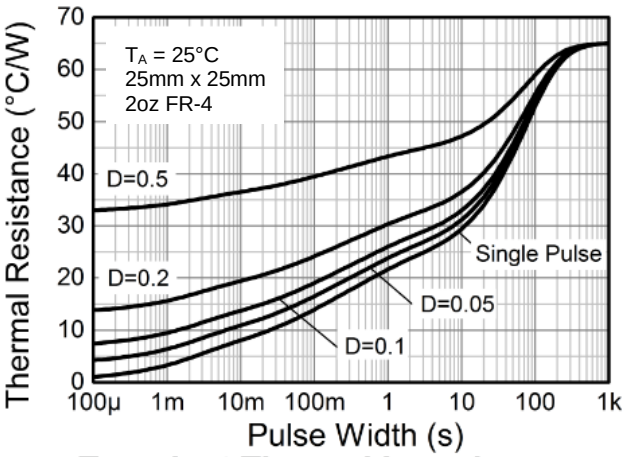
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge—Human Body Model	ESD HBM	4000	V	3A
Electrostatic Discharge—Machine Model	ESD MM	400	V	C

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.

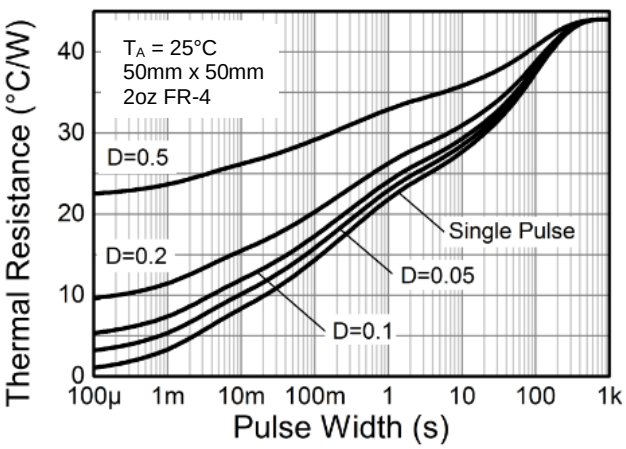
Thermal Characteristics and Derating Information



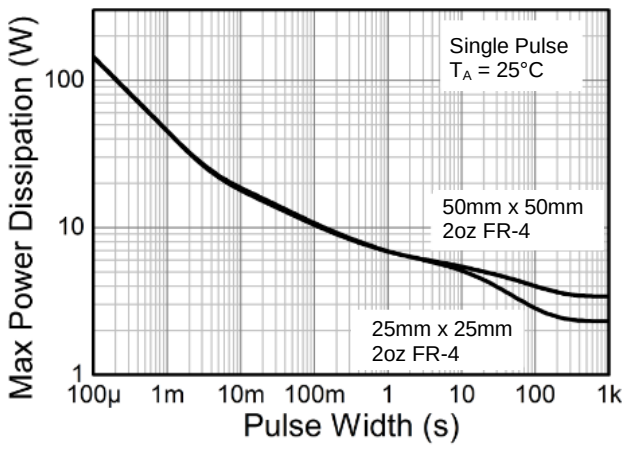
SOA, Safe Operation Area



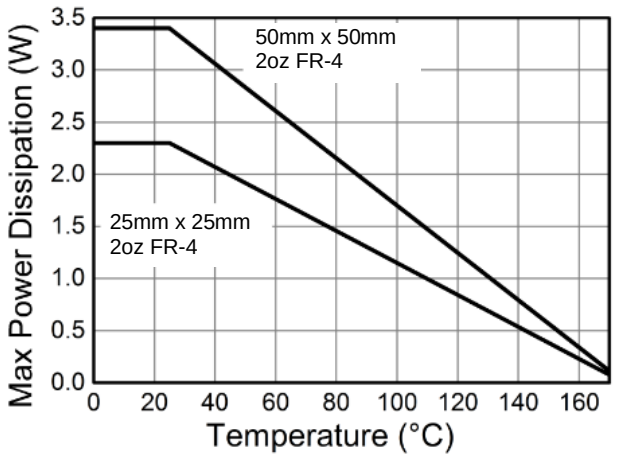
Transient Thermal Impedance



Transient Thermal Impedance



Pulse Power Dissipation



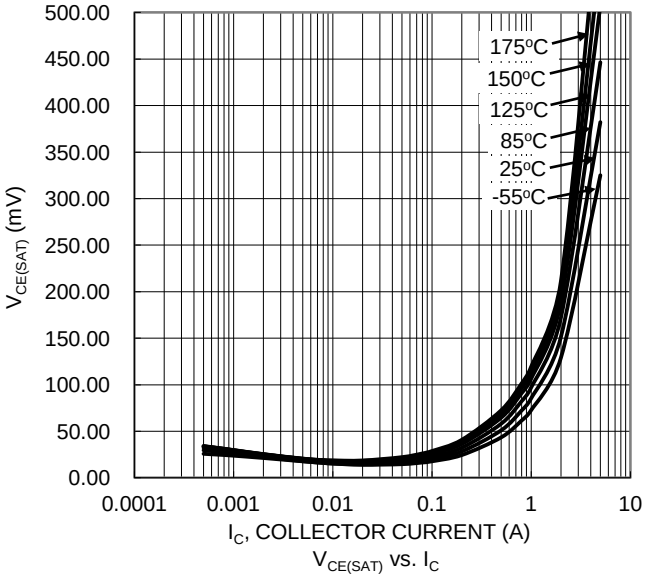
Derating Curve

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

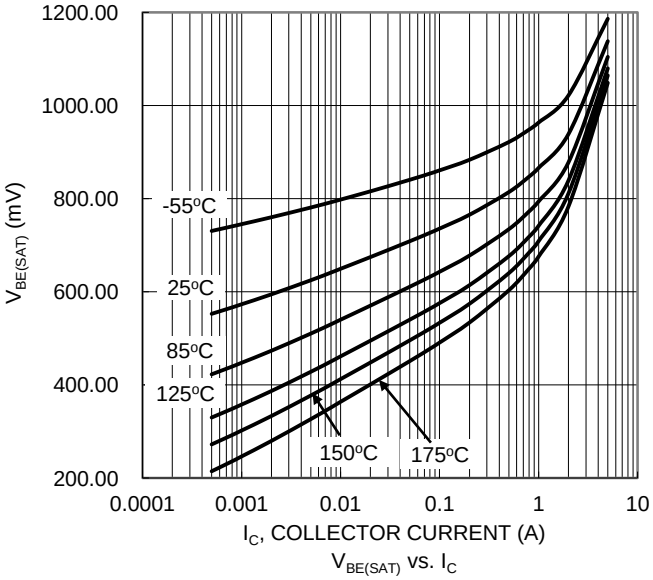
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	120	264	—	V	I_C = 100μA
Collector-Emitter Breakdown Voltage (Note 10)	BV_{CEO}	100	129	—	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	7	8.4	—	V	I_E = 100μA
Collector Cut-Off Current	I_{CBO}	—	—	50	nA	V_{CB} = 100V
		—	—	10	μA	V_{CB} = 100V, T_A = +125°C
Emitter Cut-Off Current	I_{EBO}	—	—	20	nA	V_{EB} = 6V
Collector-Emitter Saturation Voltage (Note 10)	$V_{CE(SAT)}$	—	90	250	mV	I_C = 1A, I_B = 100mA
		—	150	400	mV	I_C = 2A, I_B = 200mA
Base-Emitter Saturation Voltage (Note 10)	$V_{BE(SAT)}$	—	0.86	1	V	I_C = 1A, I_B = 100mA
Base-Emitter Turn-On Voltage (Note 10)	$V_{BE(ON)}$	—	0.79	0.95	V	I_C = 1A, V_{CE} = 2V
DC Current Gain (Note 10)	h_{FE}	70	183	—	—	I_C = 50mA, V_{CE} = 2V
		100	172	300	—	I_C = 500mA, V_{CE} = 2V
		55	113	—	—	I_C = 1A, V_{CE} = 2V
		25	56	—	—	I_C = 2A, V_{CE} = 2V
Current Gain-Bandwidth Product	f_T	140	175	—	MHz	V_{CE} = 5V, I_C = 100mA, f = 100MHz
Switching Time	t_{ON}	—	80	—	ns	I_C = 500mA, V_{CC} = 10V, I_{B1} = -I_{B2} = 50mA
	t_{OFF}	—	1200	—	ns	
Output Capacitance	C_{OBO}	—	—	30	pF	V_{CB} = 10V, f = 1MHz

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

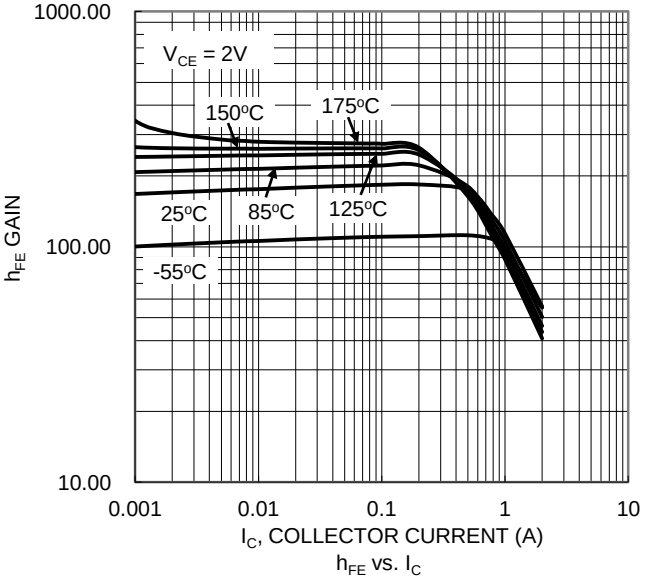
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



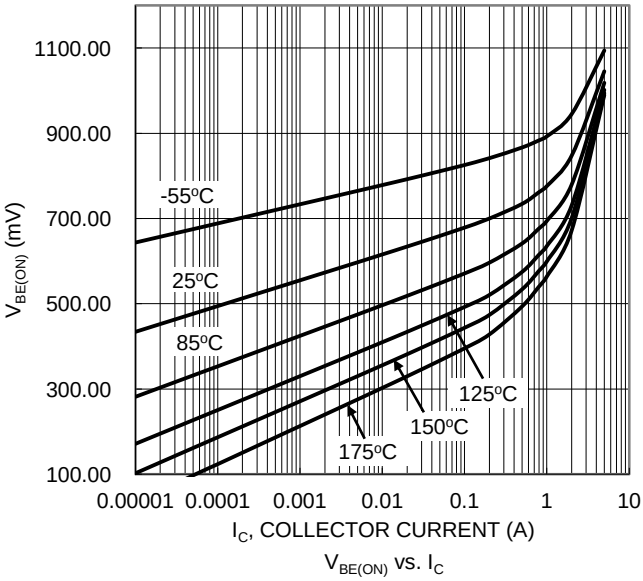
$V_{CE(SAT)}$ vs. I_C



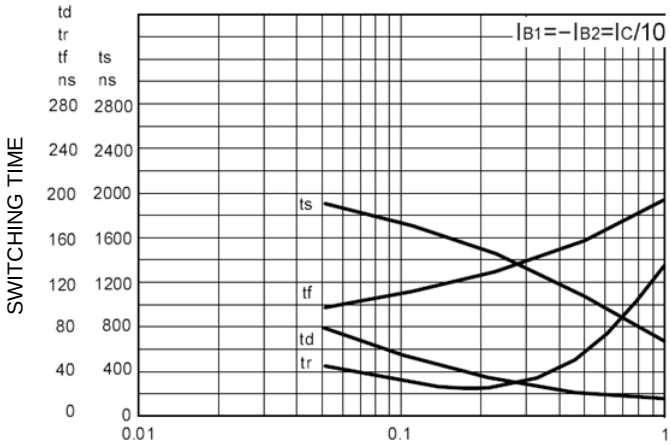
$V_{BE(SAT)}$ vs. I_C



h_{FE} vs. I_C



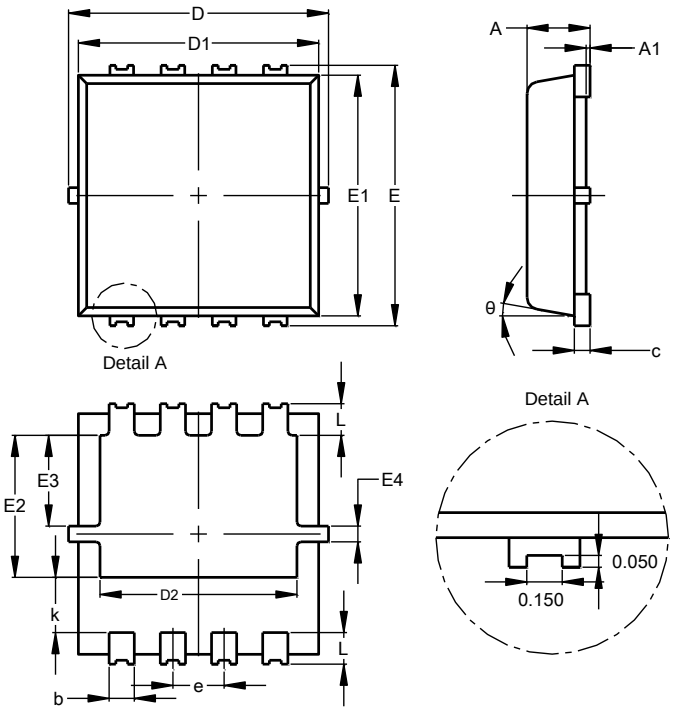
$V_{BE(ON)}$ vs. I_C



Switching Speeds

Package Outline Dimensions

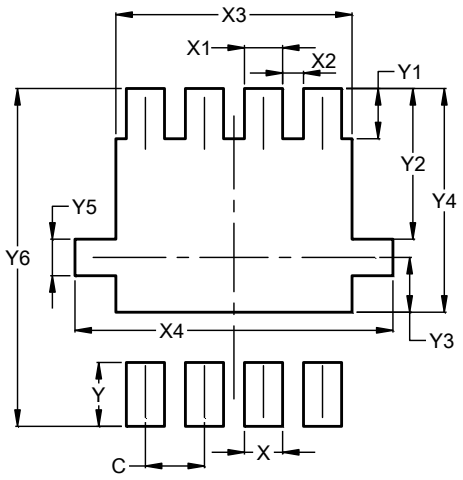
PowerDI3333-8 (SWP) (Type UX)



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

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device terminals and PCB tracking.