



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



企业QQ二维码

Features

- $BV_{CEO} > -80V$
- Small Form Factor Thermally Efficient Package. Enables Higher Density End Products
- $I_C = -1A$ Continuous Collector Current
- $I_{CM} = -2A$ Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)} < -280mV @ -0.5A$
- Rated to $+175^{\circ}C$ – Ideal For High Temperature Environment
- Wettable Flank For Improved Optical Inspection

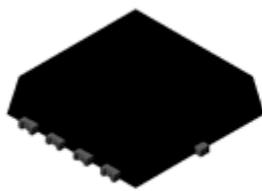
Mechanical Data

- 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)

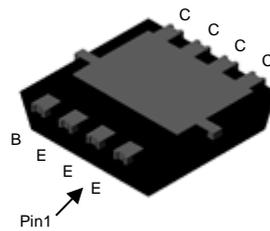
Applications

- Medium Power Switching
- Power Amplification
- AF Driver and Output Stages

PowerDI3333-8 (SWP) (Type UX)

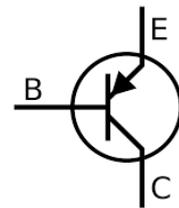


Top View



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}	-100	V
Collector-Emitter Voltage	V _{CEO}	-80	V
Emitter-Base Voltage	V _{EBO}	-7	V
Continuous Collector Current	I _C	-1	A
Peak Pulse Collector Current	I _{CM}	-2	A
Continuous Base Current	I _B	-100	mA
Peak Pulse Base Current	I _{BM}	-200	mA

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

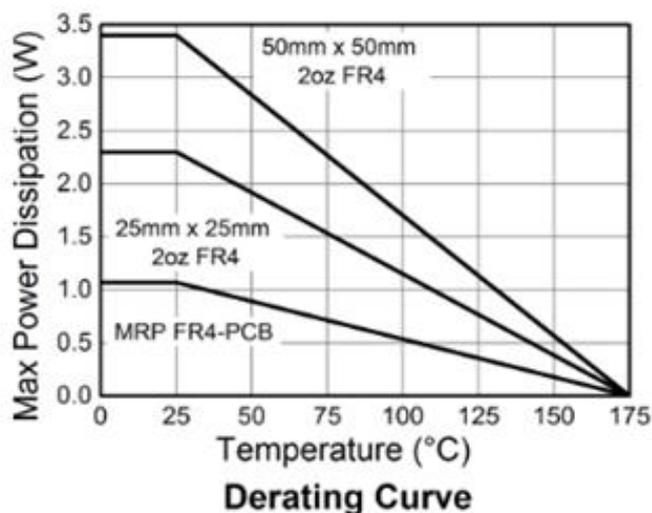
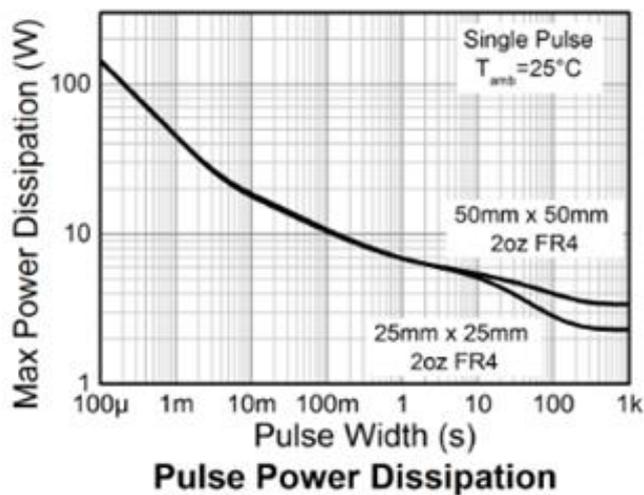
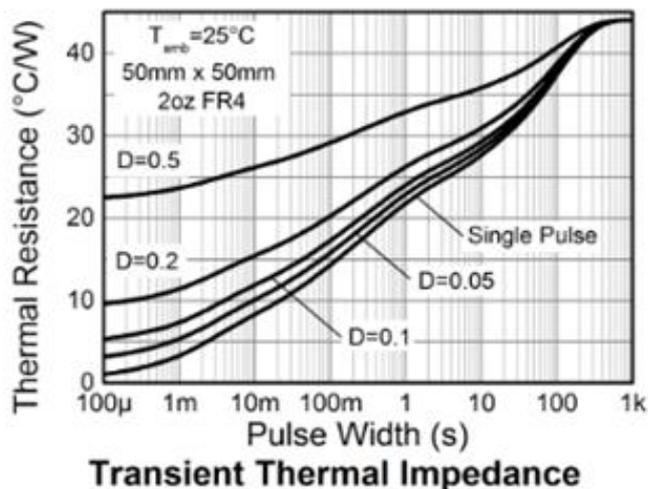
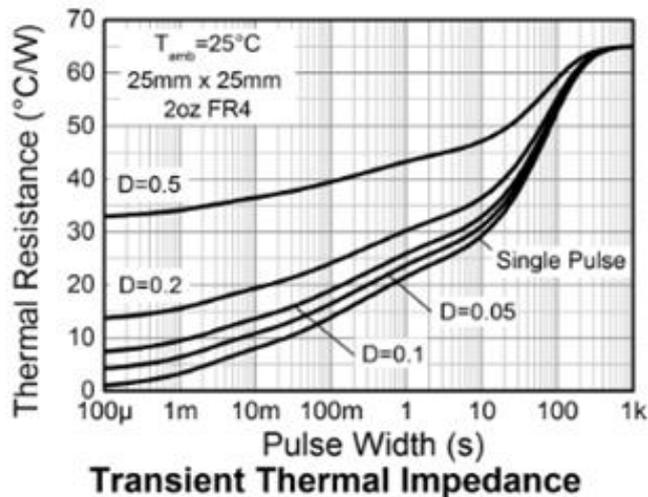
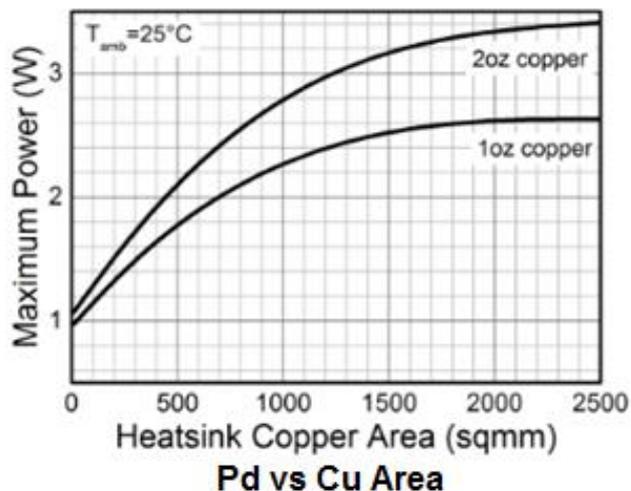
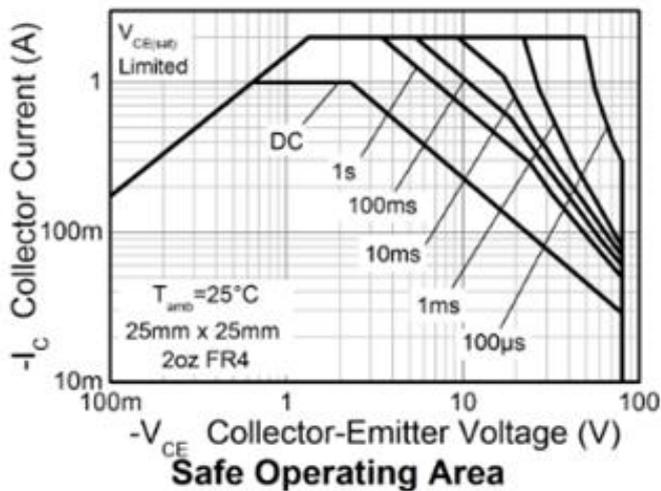
Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	1.07	W
		2.3	W
		3.4	W
Thermal Resistance, Junction to Ambient	R _{θJA}	140	°C/W
		65	°C/W
		44	°C/W
Thermal Resistance, Junction to Leads (Note 8)	R _{θJL}	11.3	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +175	°C

ESD Ratings (Note 9)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	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 x 25mm 2oz copper.
 7. Same as Note 5, except the device is mounted on 50mm x 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

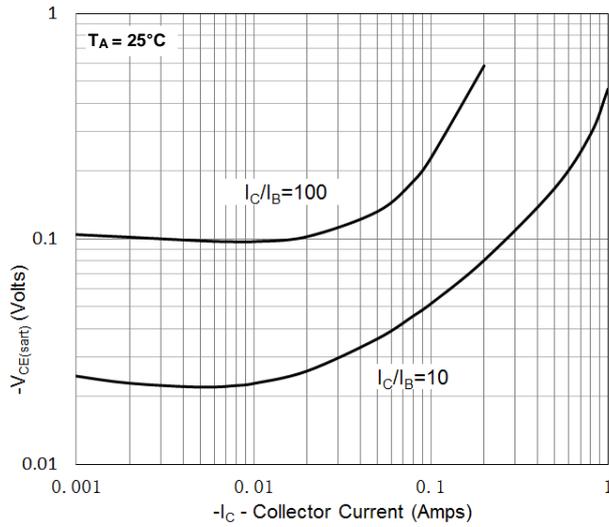


Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

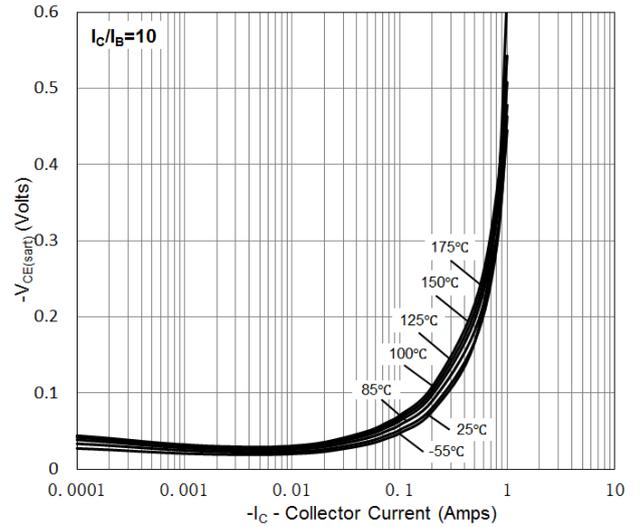
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-100	-183	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 10)	BV_{CEO}	-80	-132	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.4	—	V	$I_E = -100\mu\text{A}$
Collector-Base Cut-Off Current	I_{CBO}	—	-1 -0.13	-50 -10	nA μA	$V_{CB} = -100\text{V}$ $V_{CB} = -80\text{V}, T_A = +150^\circ\text{C}$
Collector-Emitter Cut-Off Current	I_{CES}	—	-1	-20	nA	$V_{CE} = -80\text{V}$
Emitter Cut-Off Current	I_{EBO}	—	-1	-20	nA	$V_{EB} = -6\text{V}$
Static Forward Current Transfer Ratio (Note 10)	h_{FE}	50 100 40 —	167 152 76 26	— 250 — —	—	$I_C = -5\text{mA}, V_{CE} = -2\text{V}$ $I_C = -150\text{mA}, V_{CE} = -2\text{V}$ $I_C = -500\text{mA}, V_{CE} = -2\text{V}$ $I_C = -800\text{mA}, V_{CE} = -2\text{V}$
Collector-Emitter Saturation Voltage (Note 10)	$V_{CE(sat)}$	—	-181 -410	-280 —	mV mV	$I_C = -500\text{mA}, I_B = -50\text{mA}$ $I_C = -800\text{mA}, I_B = -70\text{mA}$
Base-Emitter Turn-On Voltage (Note 10)	$V_{BE(on)}$	—	-0.804	-0.9	V	$I_C = -500\text{mA}, V_{CE} = -2\text{V}$
Transition Frequency	f_T	150	—	—	MHz	$I_C = -50\text{mA}, V_{CE} = -10\text{V}$ $f = 100\text{MHz}$
Output Capacitance	C_{obo}	—	—	25	pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$
Switching Characteristics	t_{delay}	—	8.6	—	ns	$V_{CC} = -10\text{V}, I_C = -500\text{mA}$ $I_{B1} = -I_{B2} = -50\text{mA}$
	t_{rise}	—	3.4	—	ns	
	$t_{storage}$	—	43	—	ns	
	t_{fall}	—	46	—	ns	

 Note: 10. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

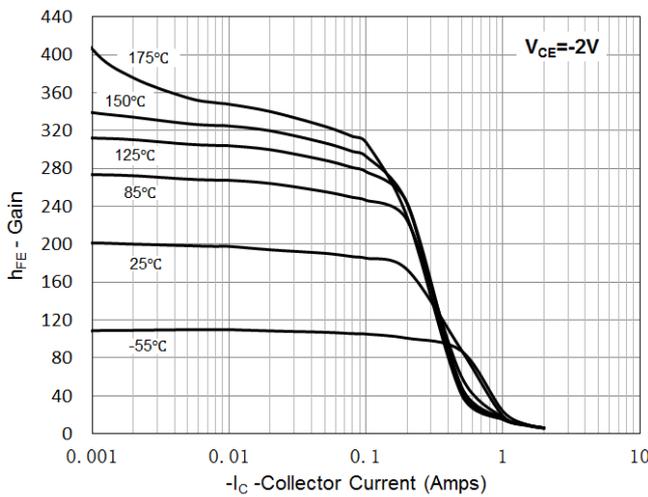
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



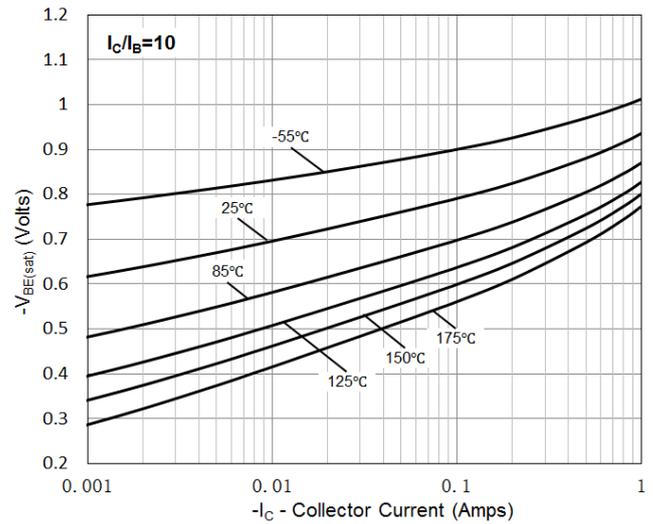
V_{CE(sat)} vs I_C



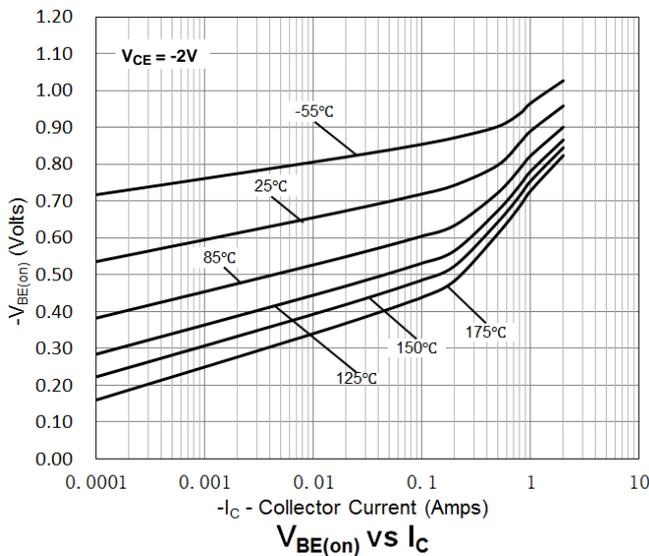
V_{CE(sat)} vs I_C



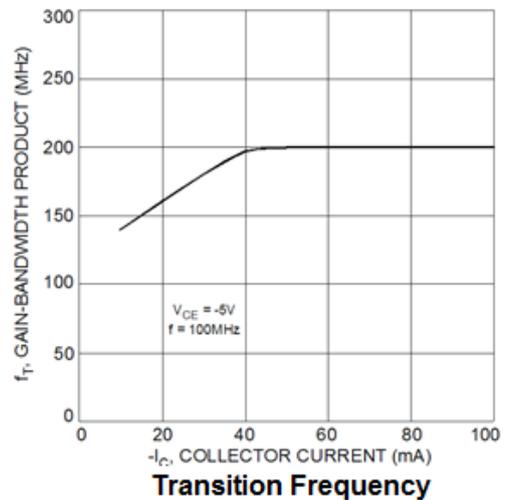
hFE vs I_C



V_{BE(sat)} vs I_C

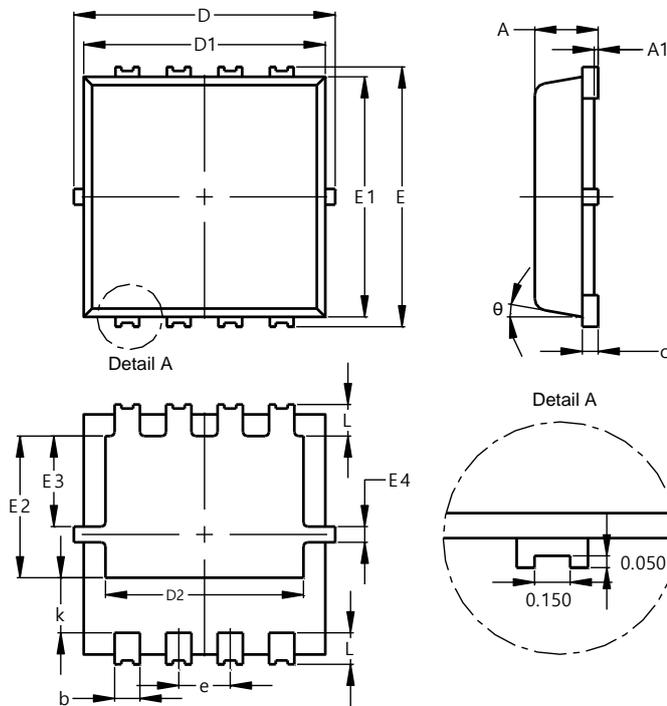


V_{BE(on)} vs I_C



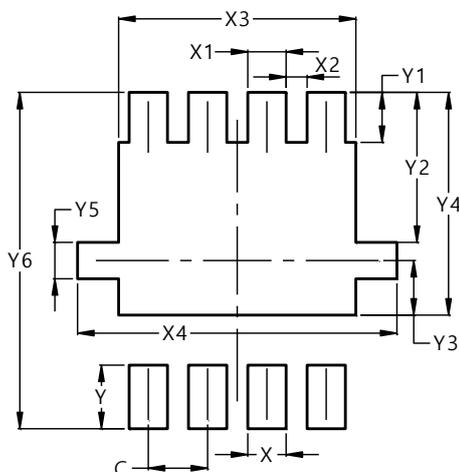
Transition Frequency

Package Outline Dimensions

PowerDI3333-8 (SWP) (Type UX)


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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