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} > 40V
- Small Form Factor Thermally Efficient Package. Enables Higher Density End Products
- I_C = 2A High Continuous Collector Current
- I_{CM} = 3A Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)}$ < 220mV @ 1A
- Complementary PNP Type: NK-DXTP22040CFGQ
- Wettable Flank for Improved Optical Inspection

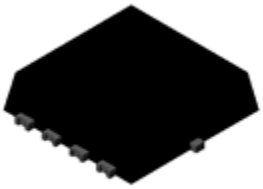
Mechanical Data

- 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 e3
- Weight: 0.03 grams (Approximate)

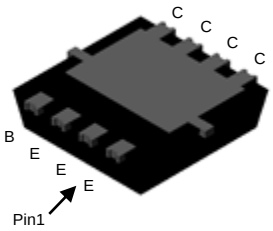
Applications

- DC to DC Conversion
- Supply Line Switching
- Low Drop Out Regulation
- LCD Backlighting

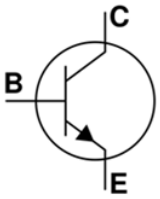
PowerDI3333-8 (SWP) (Type UX)



Top View



Bottom View



Device Symbol

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

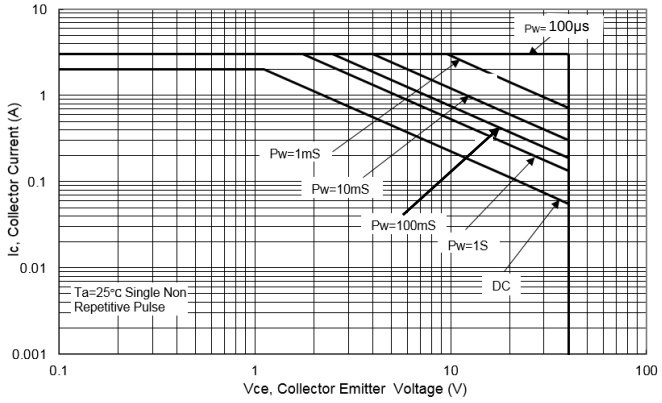
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	1.1	W
	(Note 6)		2.3	W
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	113	°C/W
	(Note 6)		55	°C/W
Thermal Resistance, Junction to Leads (Note 7)		$R_{\theta JL}$	7.4	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 8)

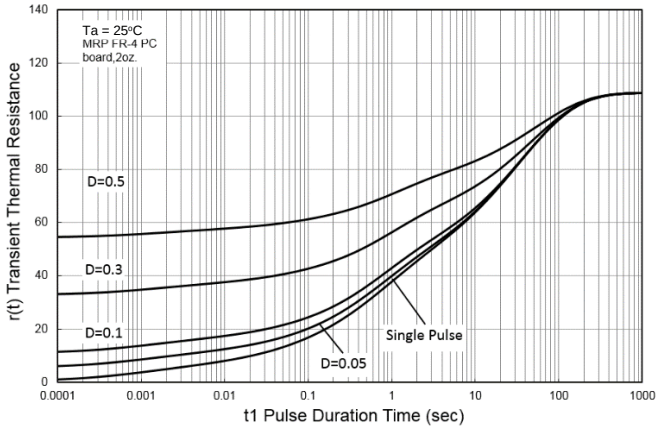
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge – Human Body Model	ESD HBM	4,000	V	3A
Charge Device Model	CDM	1,000	V	C5

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. Thermal resistance from junction to solder-point (at the collector tab).
8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

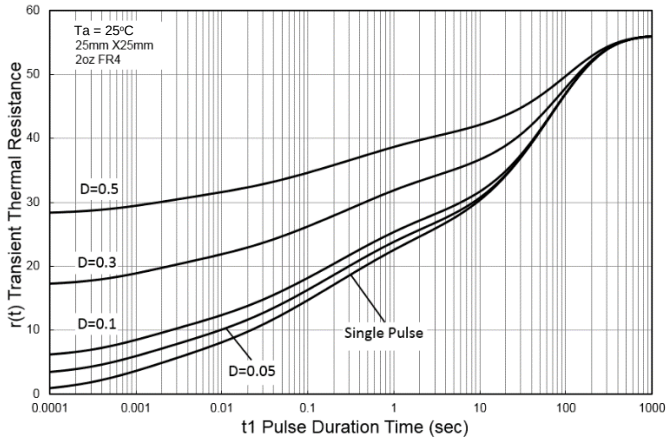
Thermal Characteristics and Derating Information



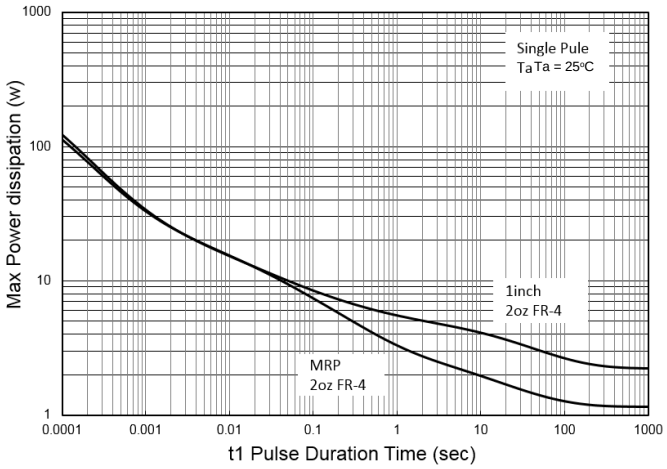
SOA Safe Operation Area



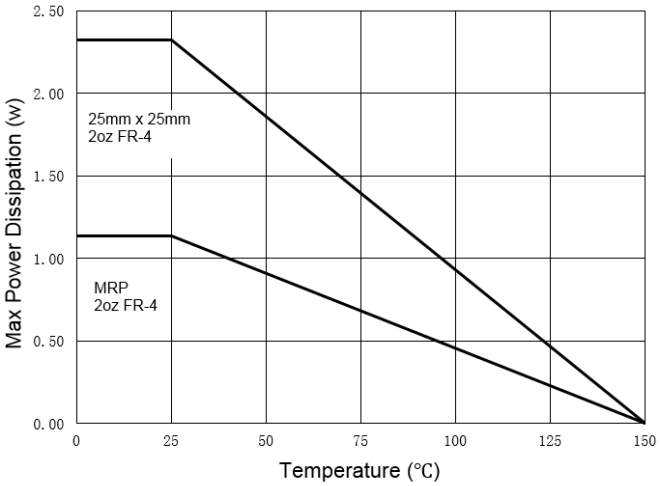
Transient Thermal Resistance



Transient Thermal Resistance



Pulse Power dissipation



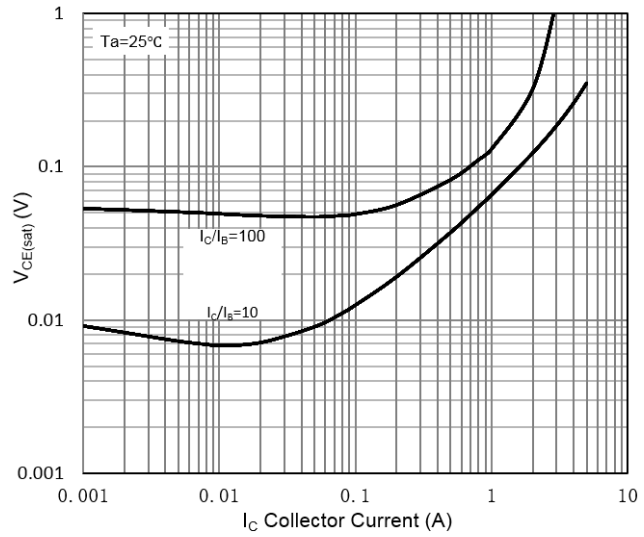
Derating Curve

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

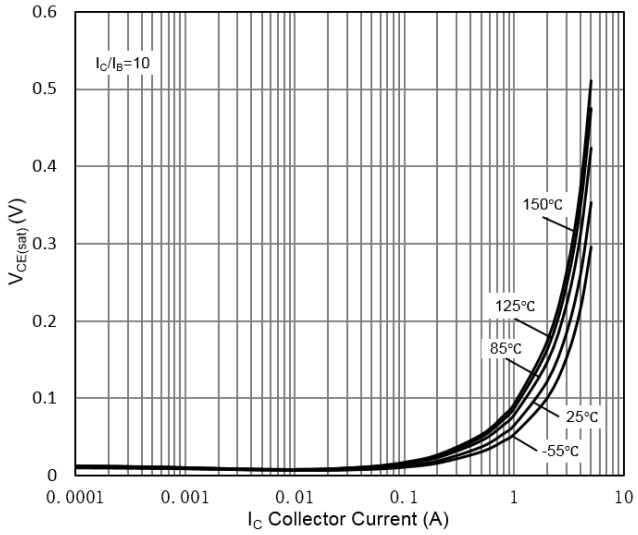
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	50	172	—	V	I_C = 100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	40	54	—	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	7	8	—	V	I_E = 100μA
Collector-Base Cut-Off Current	I_{CBO}	—	1.5 0.06	50 20	nA μA	V_{CB} = 50V V_{CB} = 50V, T_A = +150°C
Emitter-Base Cut-Off Current	I_{EBO}	—	1	20	nA	V_{EB} = 6V
Collector-Emitter Cut-Off Current	I_{CES}	—	2	50	nA	V_{CE} = 40V, V_{BE} = 0V
Static Forward Current Transfer Ratio (Note 9)	h_{FE}	200 200 150 80	329 329 305 233	— 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 9)	$V_{CE(sat)}$	—	49 37 65 121 180	80 120 220 350 600	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
Base-Emitter Saturation Voltage (Note 9)	$V_{BE(sat)}$	—	0.91	1.1	V	I_C = 1A, I_B = 100mA
Base-Emitter Turn-On Voltage (Note 9)	$V_{BE(on)}$	—	0.78	1	V	I_C = 1A, V_{CE} = 2V
Input Capacitance	C_{ibo}	—	160	—	pF	V_{EB} = 0.5V, f = 1MHz
Output Capacitance	C_{obo}	—	11	—	pF	V_{CB} = 10V, f = 1MHz
Transition Frequency	f_T	—	200	—	MHz	I_C = 50mA, V_{CE} = 10V f = 100MHz
Switching Time	t_{delay}	—	7.9	—	ns	I_C = 1A, V_{CC} = 10V, I_{B1} = -I_{B2} = 100mA
	t_{rise}	—	2.9	—	ns	
	$t_{storage}$	—	728	—	ns	
	t_{fall}	—	32.6	—	ns	

Note: 9. 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



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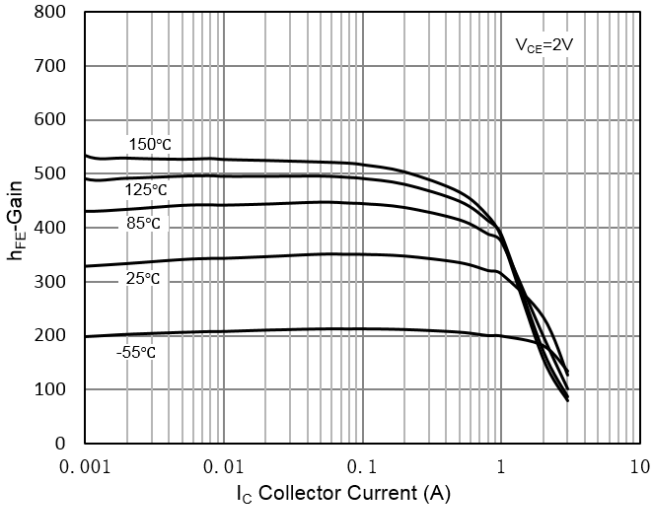
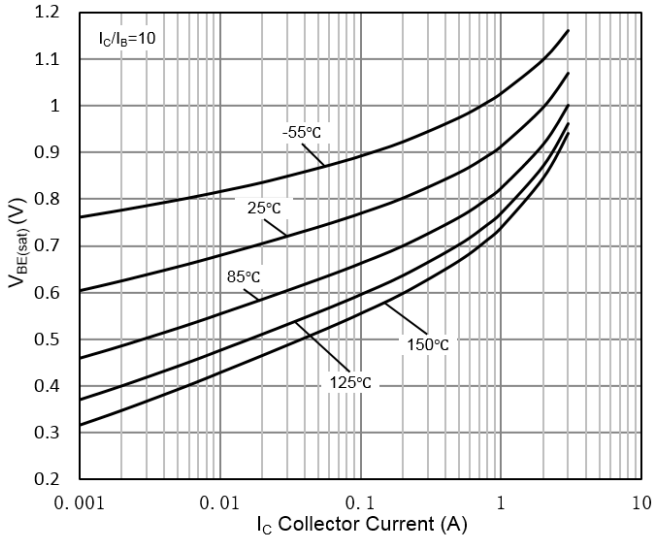
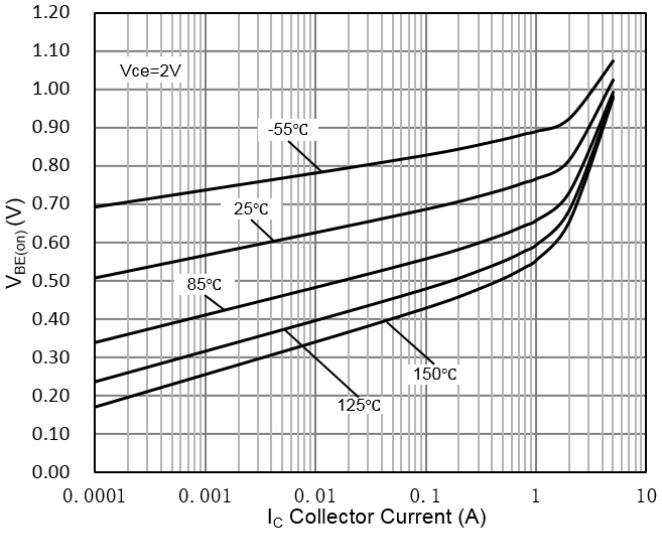


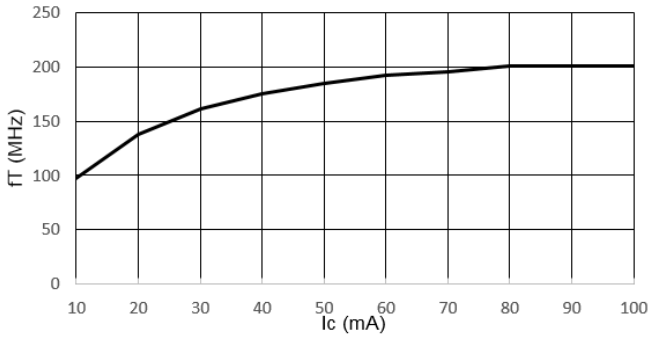
h_{FE} vs I_C



$V_{BE(sat)}$ vs I_C



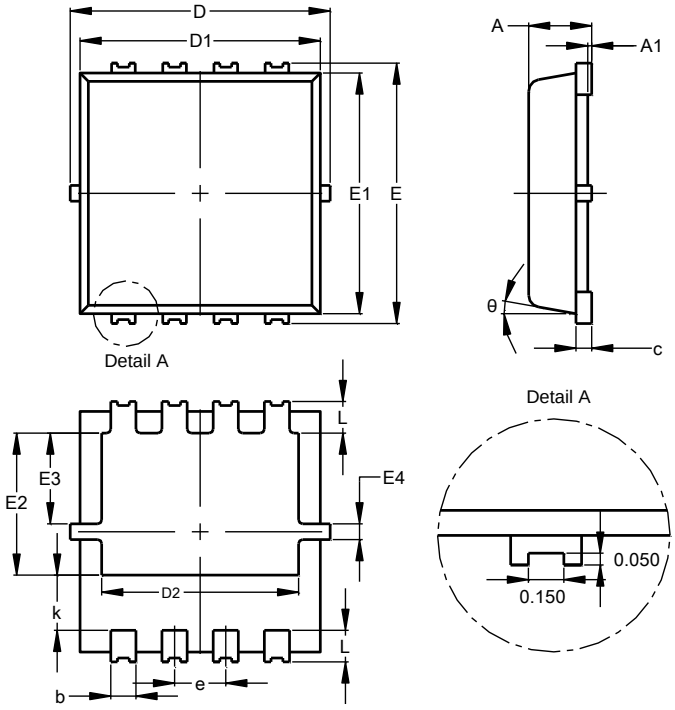
$V_{BE(on)}$ vs I_C



fT vs Ic

Package Outline Dimensions

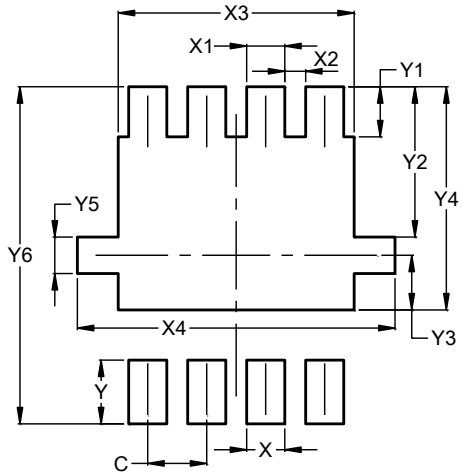
PowerDI3333-8 (SWP) (Type UX)



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