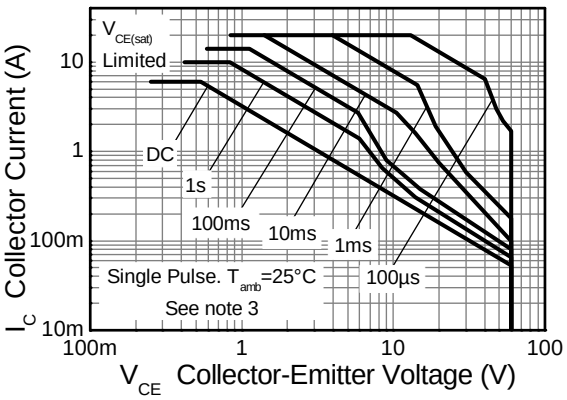
Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	150	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	6	A
Peak Pulse Current	I_{CM}	20	A

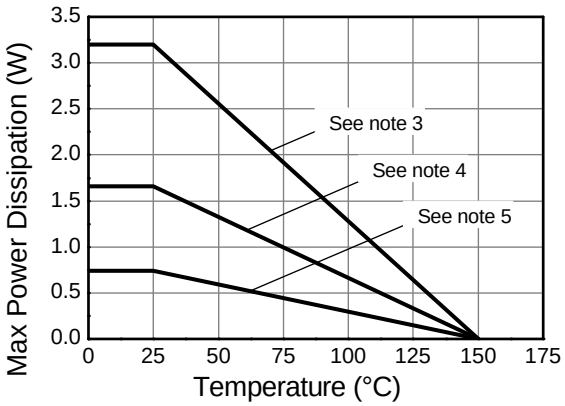
Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation @ T_A = 25°C (Note 4)	P_D	3.2	W
Thermal Resistance, Junction to Ambient Air (Note 4) @T_A = 25°C	$R_{\theta JA}$	39	°C/W
Power Dissipation @ T_A = 25°C (Note 5)	P_D	1.7	W
Thermal Resistance, Junction to Ambient Air (Note 5) @T_A = 25°C	$R_{\theta JA}$	75	°C/W
Power Dissipation @ T_A = 25°C (Note 6)	P_D	0.74	W
Thermal Resistance, Junction to Ambient Air (Note 6) @T_A = 25°C	$R_{\theta JA}$	169	°C/W
Thermal Resistance, Junction to Collector Terminal	$R_{\theta JT}$	5.6	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

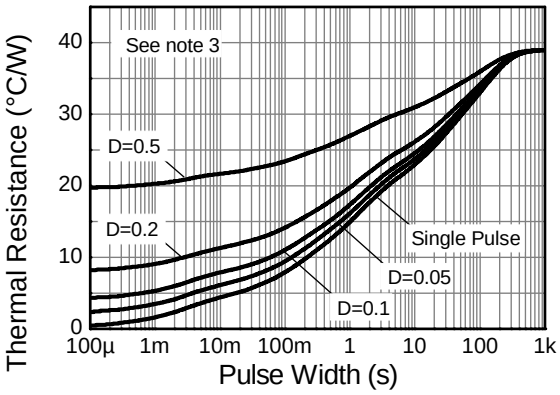
Notes: 4. Device mounted on FR-4 PCB, single sided 2 oz. copper, collector pad dimensions 25mm x 25mm.
5. Device mounted on FR-4 PCB, single sided 1 oz. copper, collector pad dimensions 50mm x 50mm.
6. Device mounted on FR-4 PCB, single sided 1 oz. copper, minimum recommended pad layout.



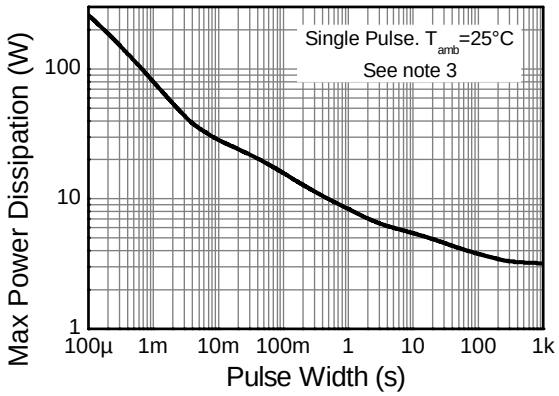
Safe Operating Area



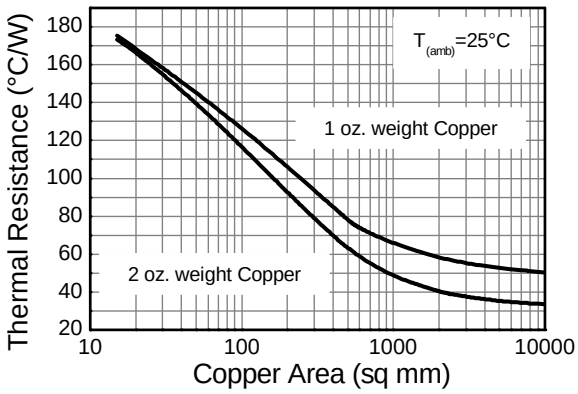
Derating Curve



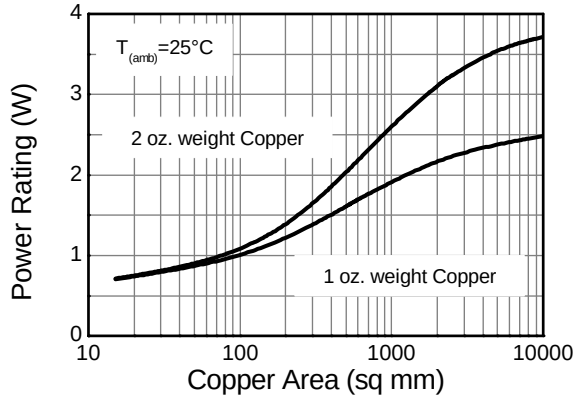
Transient Thermal Impedance



Pulse Power Dissipation



Thermal Resistance vs. Cu Area



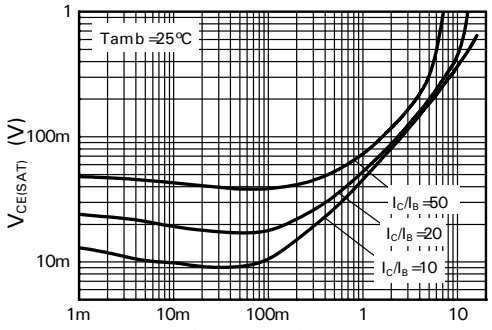
Power Rating vs. Cu Area

Electrical Characteristics @T_A = 25°C unless otherwise specified

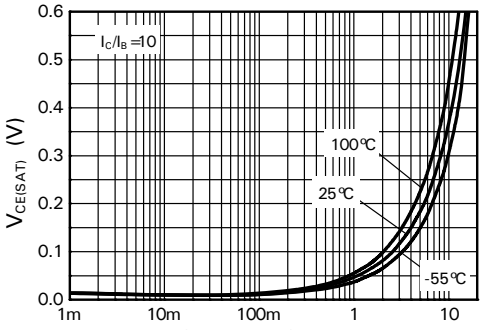
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	150	190	—	V	I_C = 100μA
Collector-Emitter Breakdown Voltage (Note 7)	$V_{(BR)CEO}$	60	80	—	V	I_C = 10mA
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	7.0	8.1	—	V	I_E = 100μA
Collector Cutoff Current	I_{CBO}	—	—	20 0.5	nA μA	V_{CB} = 120V V_{CB} = 120V, T_{amb} = 100 °C
Collector Cutoff Current	I_{CER} R≤1kΩ	—	—	20 0.5	nA μA	V_{CB} = 120V V_{CB} = 120V, T_{amb} = 100 °C
Emitter Cutoff Current	I_{EBO}	—	—	10	nA	V_{EB} = 6V
Collector-Emitter Saturation Voltage (Note 7)	$V_{CE(sat)}$	—	20 45 50 100 210	30 60 70 135 260	mV	I_C = 100mA, I_B = 5mA I_C = 1A, I_B = 100mA I_C = 1A, I_B = 50mA I_C = 2A, I_B = 50mA I_C = 6A, I_B = 300mA
Base-Emitter Saturation Voltage (Note 7)	$V_{BE(sat)}$	—	1000	1100	mV	I_C = 6A, I_B = 300mA
Base-Emitter Turn-On Voltage (Note 7)	$V_{BE(on)}$	—	940	1050	mV	V_{CE} = 1V, I_C = 6A
DC Current Gain (Note 6)	h_{FE}	100 100 55 20	200 200 105 40	— 300 — —	—	I_C = 10mA, V_{CE} = 1V I_C = 2A, V_{CE} = 1V I_C = 5A, V_{CE} = 1V I_C = 10A, V_{CE} = 1V
Transition Frequency	f_T	—	130	—	MHz	I_C = 100mA, V_{CE} = 10V f = 50MHz
Output Capacitance (Note 7)	C_{obo}	—	31	—	pF	V_{CB} = -10A, f = 1MHz
Switching Times	t_{on} t_{off}	— —	42 760	— —	ns ns	I_C = 1A, V_{CC} = 10V, I_{B1} = I_{B2} = 100mA

Notes: 7. Pulse Test: Pulse width ≤300μs. Duty cycle ≤2.0%.

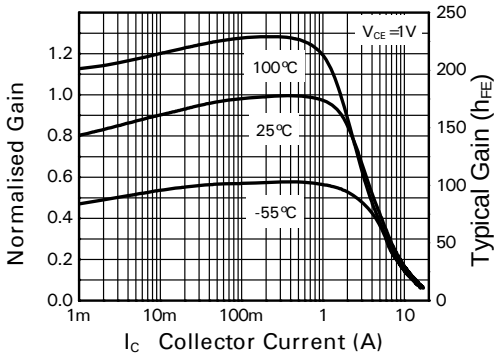
Typical Characteristic



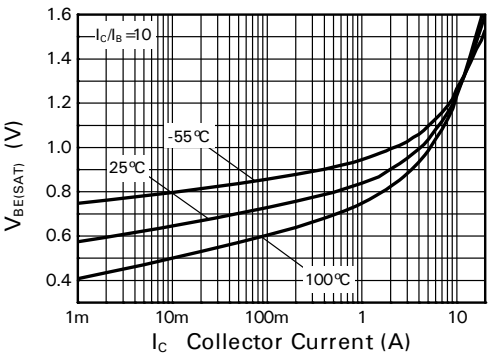
$V_{CE(SAT)}$ v I_C



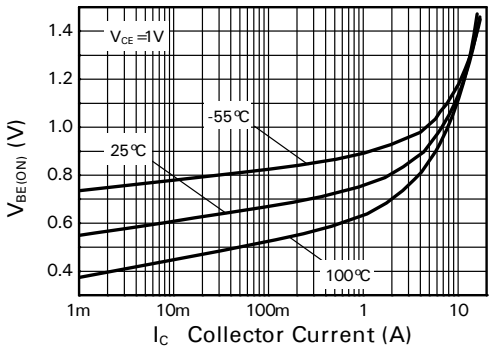
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C

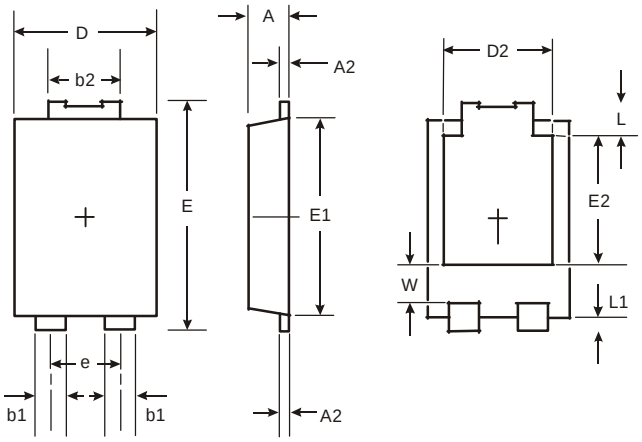


$V_{BE(SAT)}$ v I_C



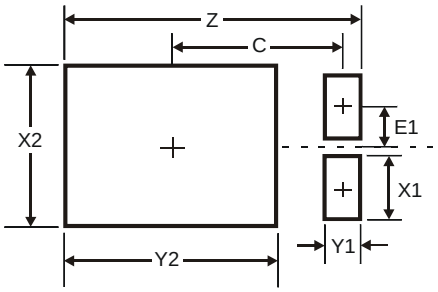
$V_{BE(ON)}$ v I_C

Package Outline Dimensions



PowerDI®5		
Dim	**Min**	**Max**
A	1.05	1.15
A2	0.33	0.43
b1	0.80	0.99
b2	1.70	1.88
D	3.90	4.05
D2	3.054 Typ	
E	6.40	6.60
e	1.84 Typ	
E1	5.30	5.45
E2	3.549 Typ	
L	0.75	0.95
L1	0.50	0.65
W	1.10	1.41
All Dimensions in mm		

Suggested Pad Layout



Dimensions	Value (in mm)
Z	6.6
X1	1.4
X2	3.6
Y1	0.8
Y2	4.7
C	3.87
E1	0.9

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