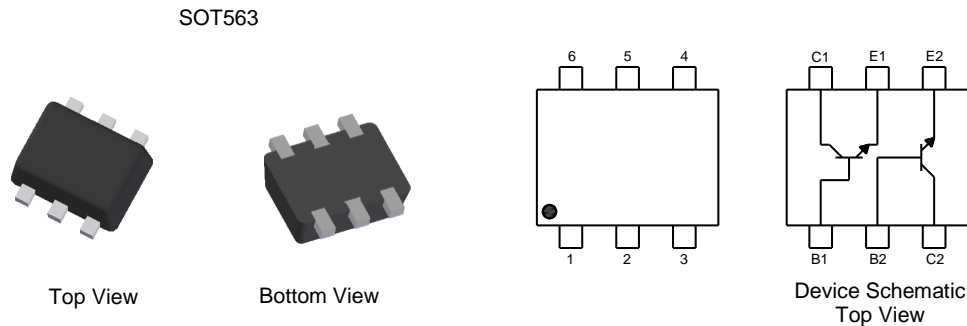


Features

- Ultra-Small Surface Mount Package
- Current Gain Matching
- Base-Emitter Voltage Matching
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

Mechanical Data

- Package: SOT563
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Matte Tin Finish. Solderable per MIL-STD-202, Method 208 **e3**
- Weight: 0.003 grams (Approximate)

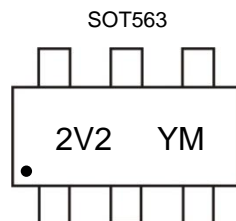


Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Quantity	Carrier
DMMT32N45CV-7	SOT563	2V2	7	8	3,000	Reel
DMMT32N45CV-7R	SOT563	2V2	7	8	3,000	Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



2V2 = Product Type Marking Code
 YM = Date Code Marking
 Y or \bar{Y} = Year (ex: K = 2023)
 M or \bar{M} = Month (ex: 9 = September)

Date Code Key

Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Code	K	L	M	N	P	R	S	T	U	V	W	X

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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}	45	V
Emitter-Base Voltage	V _{EBO}	6	V
Collector Current	I _C	100	mA
Peak Collector Current	I _{CM}	200	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5 & 6)	P _D	265	mW
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	470	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 7)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge – Machine Model	ESD MM	300	V	C

- Notes:
5. For a device mounted with the collector lead on minimum recommended pad layout 1oz copper that is on a single-sided 1.6mm FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 6. For a matched device with one active die.
 7. Refer to JEDEC specification JS-001-2017 and JESD22-A115.

Thermal Characteristics and Derating Information (Note 6)

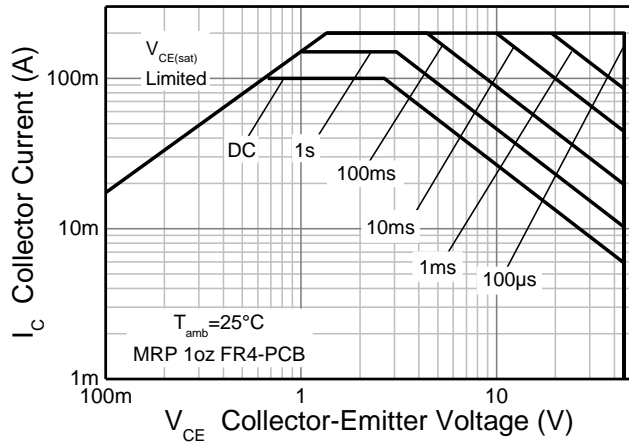


Figure 1. Safe Operating Area

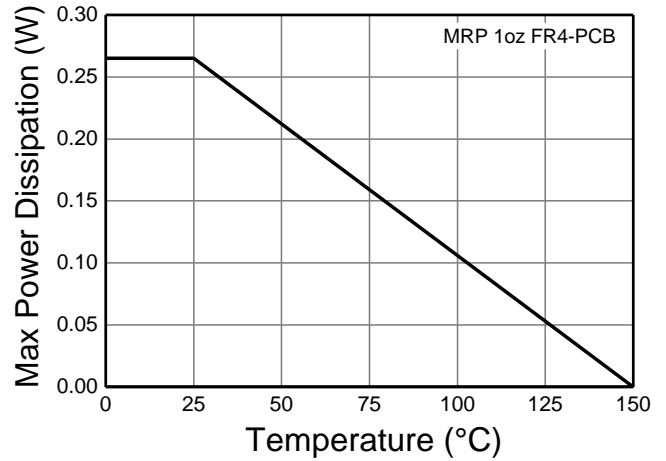


Figure 2. Derating Curve

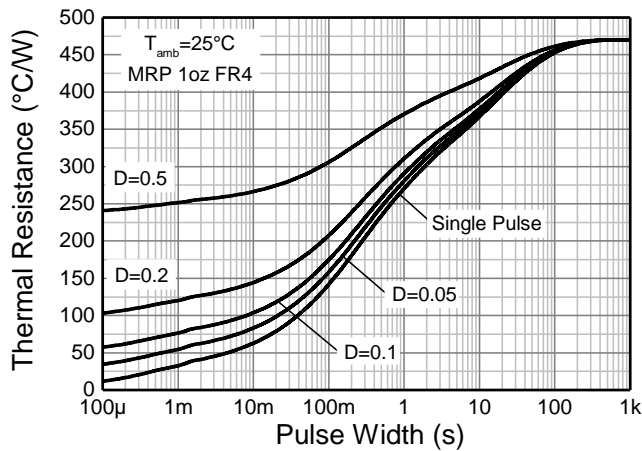


Figure 3. Transient Thermal Impedance

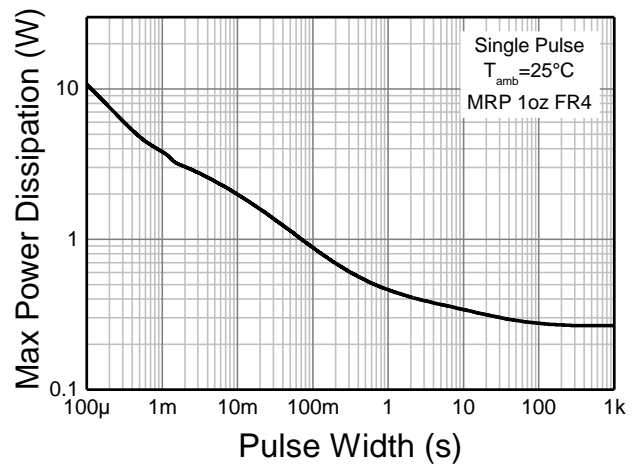


Figure 4. Pulse Power Dissipation

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

Characteristic (Note 8)	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	50	—	—	V	I _C = 100μA
Collector-Emitter Breakdown Voltage	BV _{CEO}	45	—	—	V	I _C = 10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	6	—	—	V	I _E = 100μA
DC Current Gain	h _{FE}	—	250	—	—	V _{CE} = 5V, I _C = 10μA
		200	290	450	—	V _{CE} = 5V, I _C = 2mA
DC Current Gain Matching (Note 9)	h _{FE1} /h _{FE2}	0.95	1	—	—	V _{CE} = 5V, I _C = 2mA
Collector-Emitter Saturation Voltage	V _{CE(sat)}	—	90	200	mV	I _C = 10mA, I _B = 0.5mA
		—	200	400	mV	I _C = 100mA, I _B = 5mA
Base-Emitter Saturation Voltage	V _{BE(sat)}	—	700	—	mV	I _C = 10mA, I _B = 0.5mA
		—	900	—	mV	I _C = 100mA, I _B = 5mA
Base-Emitter Voltage	V _{BE(on)}	610	660	710	mV	V _{CE} = 5V, I _C = 2mA
		—	—	770	mV	V _{CE} = 5V, I _C = 10mA
Base-Emitter Voltage Matching (Note 10)	V _{BE1(on)} - V _{BE2(on)}	—	—	2	mV	V _{CE} = 5V, I _C = 2mA
Collector-Cutoff Current	I _{CBO}	—	—	15	nA	V _{CB} = 30V
		—	—	5	μA	V _{CB} = 30V, T _A = +150°C
Emitter-Cutoff Current	I _{EBO}	—	—	100	nA	V _{EB} = 5V
Current Gain-Bandwidth Product	f _T	100	300	—	MHz	V _{CE} = 5V, I _C = 10mA, f = 100MHz
Input Capacitance	C _{IBO}	—	7.1	—	pF	V _{EB} = 0.5V, f = 1MHz
Output Capacitance	C _{OBO}	—	—	1.5	pF	V _{CB} = 10V, f = 1MHz
Delay Time	t _(d)	—	4.8	—	ns	V _{CC} = 5V, I _C = 10mA, I _{B1} = -I _{B2} = 1mA
Rise Time	t _(r)	—	4.8	—	ns	
Storage Time	t _(s)	—	314	—	ns	
Fall Time	t _(f)	—	51	—	ns	

- Notes:
8. Short duration pulse test used to minimize self-heating effect.
 9. The smaller of the two values is taken as the numerator.
 10. The smaller of the two values is subtracted from the larger value.

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

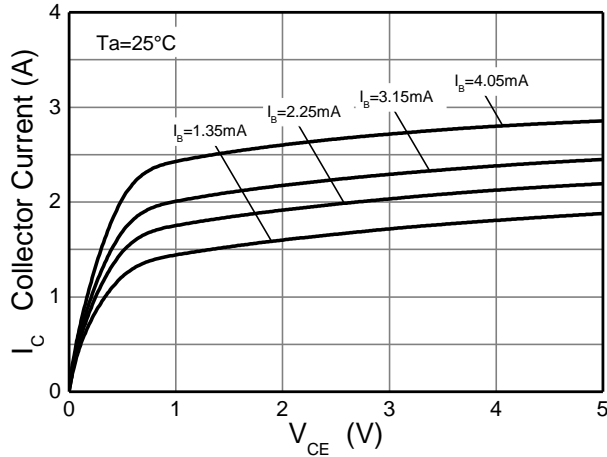


Figure 5. I_C v V_{CE}

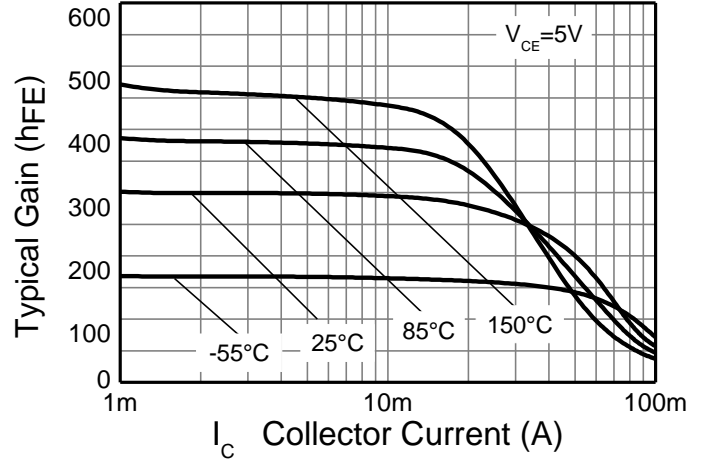


Figure 6. h_{FE} v I_C

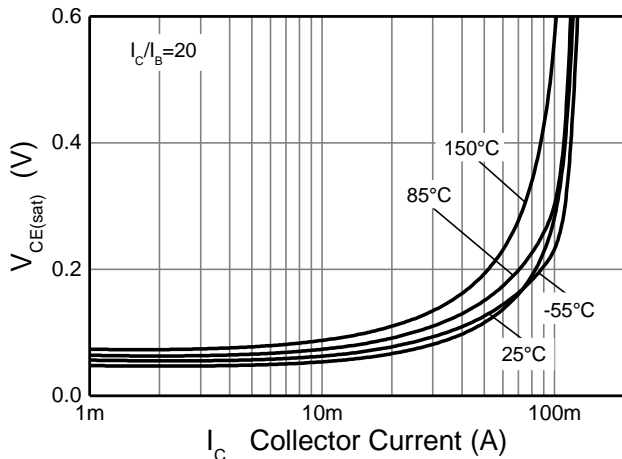


Figure 7. $V_{CE(sat)}$ v I_C

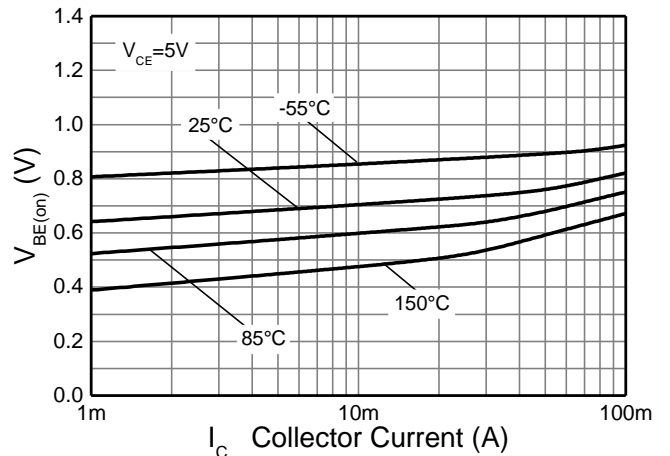


Figure 8. $V_{BE(on)}$ v I_C

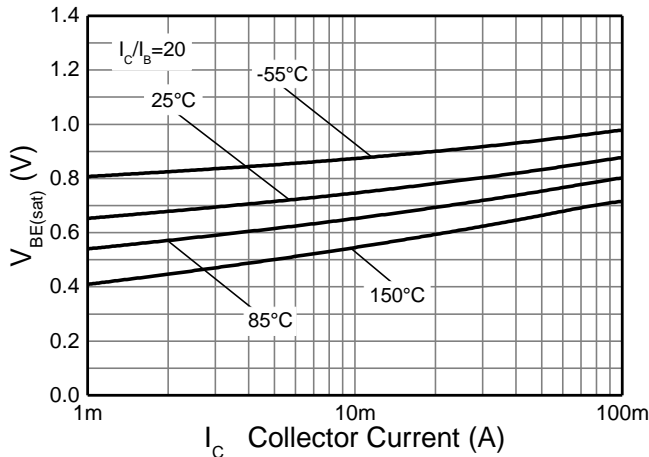
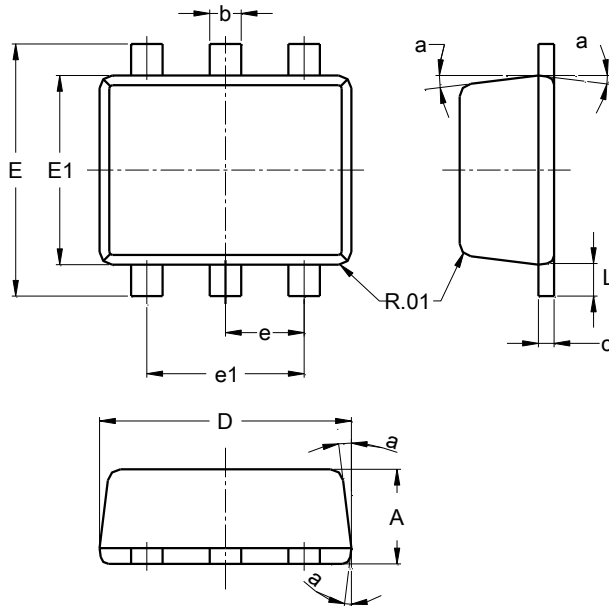


Figure 9. $V_{BE(sat)}$ v I_C

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT563

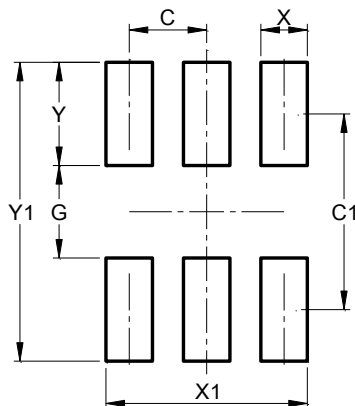


SOT563			
Dim	Min	Max	Typ
A	0.55	0.60	--
b	0.15	0.30	0.20
c	0.10	0.18	0.11
D	1.50	1.70	1.60
E	1.55	1.70	1.60
E1	1.10	1.25	1.20
e	--	--	0.50
e1	0.90	1.10	1.00
L	0.10	0.30	0.20
a	8°	9°	7°
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT563



Dimensions	Value (in mm)
C	0.500
C1	1.270
G	0.600
X	0.300
X1	1.300
Y	0.670
Y1	1.940

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