

Product Summary

BV _{DSS}	R _{DS(ON)} max	I _D max T _A = +25°C
-25V	10Ω @ V _{GS} = -4.5V	-150mA
	13Ω @ V _{GS} = -2.7V	-140mA

Description

This MOSFET has been designed to minimize the on-state resistance (R_{DS(ON)}) yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

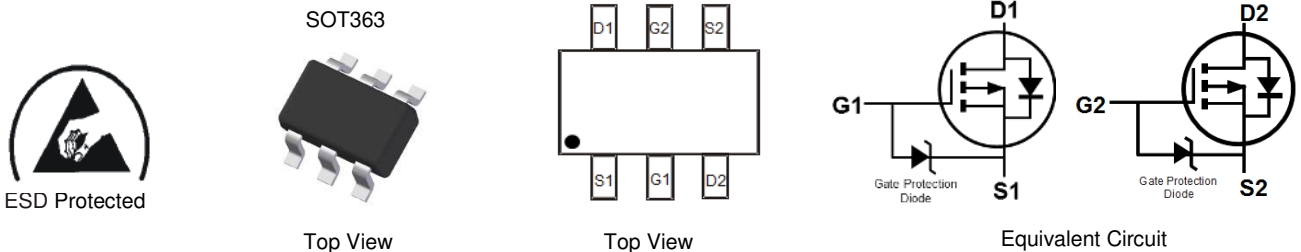
- General Purpose Interfacing Switch
- Power Management Functions
- Analog Switch

Features and Benefits

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- ESD Protected
- **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-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

Mechanical Data

- Case: SOT363
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208@3
- Terminal Connections: See Diagram
- Weight: 0.006 grams (Approximate)

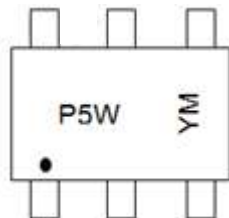


Ordering Information (Note 4)

Part Number	Case	Packaging
DMG6302UDW-7	SOT363	3,000/Tape & Reel
DMG6302UDW-13	SOT363	10,000/Tape & 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



P5W = Product Type Marking Code
 YM or Y̅M = Date Code Marking
 Y or Y̅ = Year (ex: H = 2020)
 M = Month (ex: 9 = September)

Date Code Key

Year	2015	...	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Code	C	...	H	I	J	K	L	M	N	O	P	R

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 – Total Device (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	310	mW
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	407	°C/W
Power Dissipation (Note 6)	P _D	380	mW
Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	326	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	-25	V
Gate-Source Voltage	V _{GSS}	±8	V
Continuous Drain Current (Note 6) V _{GS} = -4.5V	I _D	T _A = +25°C	-150
		T _A = +70°C	-120
Continuous Drain Current (Note 6) V _{GS} = -2.7V	I _D	T _A = +25°C	-140
		T _A = +70°C	-110

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV _{DSS}	-25	—	—	V	V _{GS} = 0V, I _D = -250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	-1.0	μA	V _{DS} = -20V, V _{GS} = 0V
Gate-Body Leakage	I _{GSS}	—	—	-100	nA	V _{GS} = -8V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	-0.65	—	-1.5	V	V _{DS} = V _{GS} , I _D = -250μA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	2	10	Ω	V _{GS} = -4.5V, I _D = -0.14A
		—	2.7	13	Ω	V _{GS} = -2.7V, I _D = -0.05A
Diode Forward Voltage	V _{SD}	—	-0.8	-1.2	V	V _{DS} = V _{GS} , I _D = -0.2A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{iss}	—	30.7	—	pF	V _{DS} = -10V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	5.9	—		
Reverse Transfer Capacitance	C _{rss}	—	1.5	—		
Total Gate Charge	Q _g	—	0.34	—	nC	V _{DS} = -5V, I _D = -0.2A, V _{GS} = -4.5V
Gate-Source Charge	Q _{gs}	—	0.06	—		
Gate-Drain Charge	Q _{gd}	—	0.08	—		
Turn-On Delay Time	t _{D(ON)}	—	3.3	—	ns	V _{GS} = -4.5V, V _{DD} = -6V I _D = -0.2A, R _G = 50Ω
Turn-On Rise Time	t _R	—	2.0	—		
Turn-Off Delay Time	t _{D(OFF)}	—	16.3	—		
Turn-Off Fall Time	t _F	—	7.9	—		

- Notes:
5. Device mounted on FR-4 PCB, with minimum recommended pad layout.
 6. Device mounted on 1" × 1" FR-4 PCB with high coverage 2oz. Copper, single sided.
 7. Short duration pulse test used to minimize self-heating effect.
 8. Guaranteed by design. Not subject to product testing.

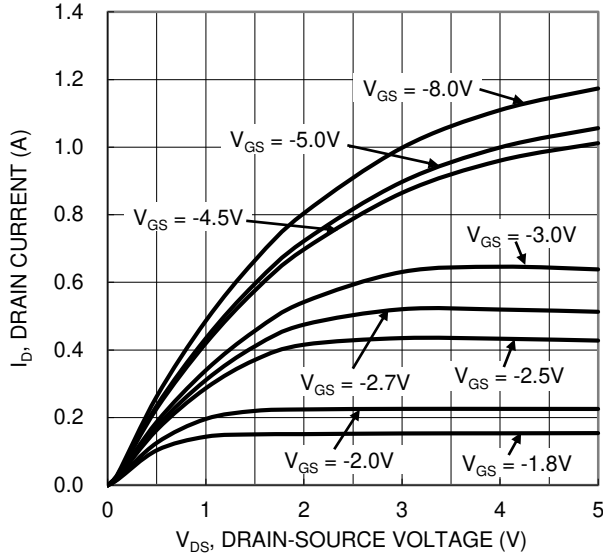


Figure 1. Typical Output Characteristic

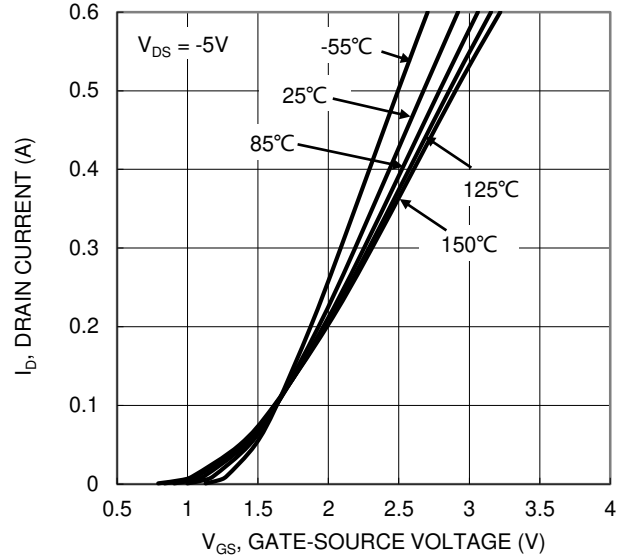


Figure 2. Typical Transfer Characteristic

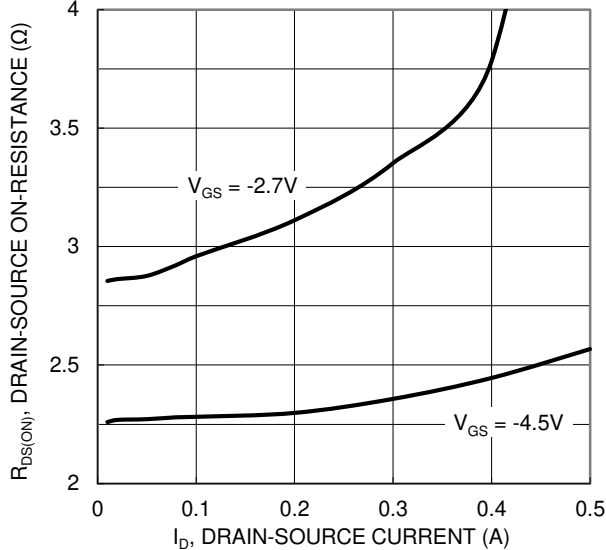


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

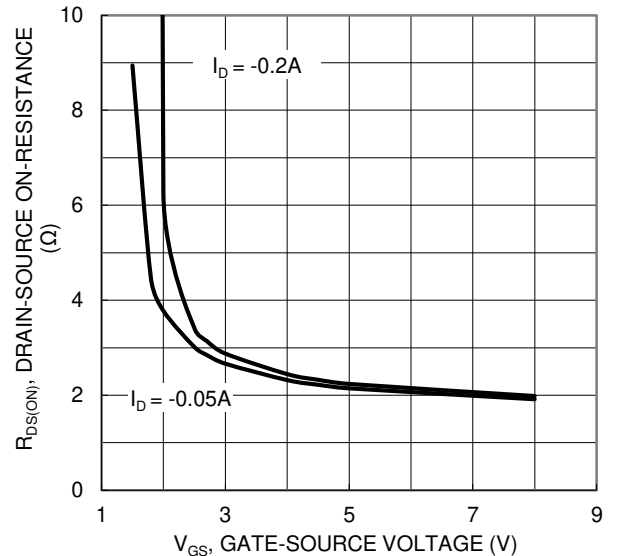


Figure 4. Typical Transfer Characteristic

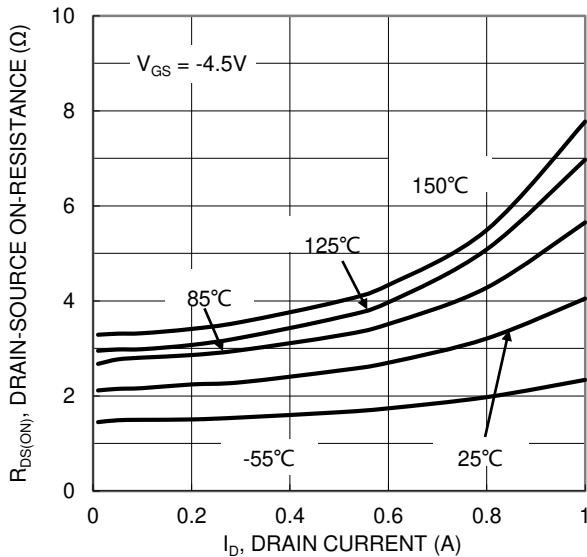


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

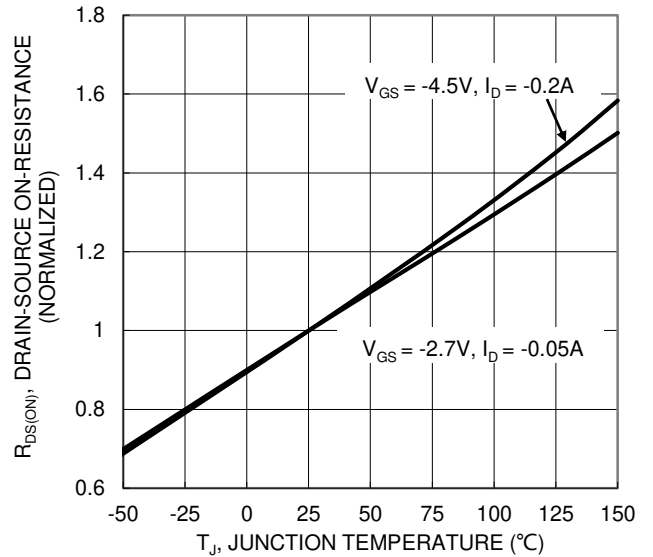


Figure 6. On-Resistance Variation with Temperature

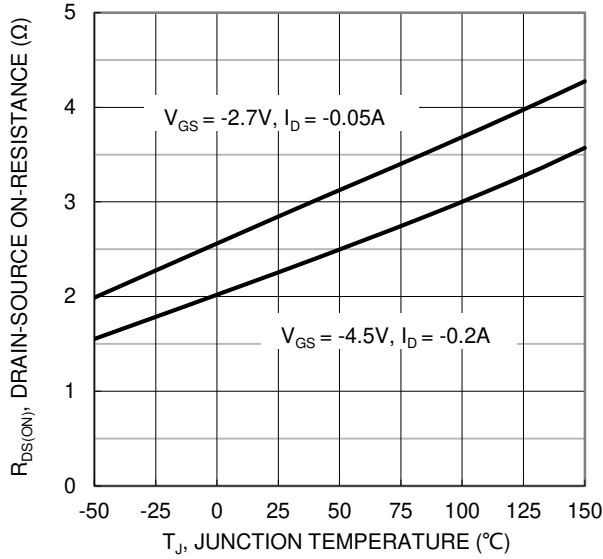


Figure 7. On-Resistance Variation with Temperature

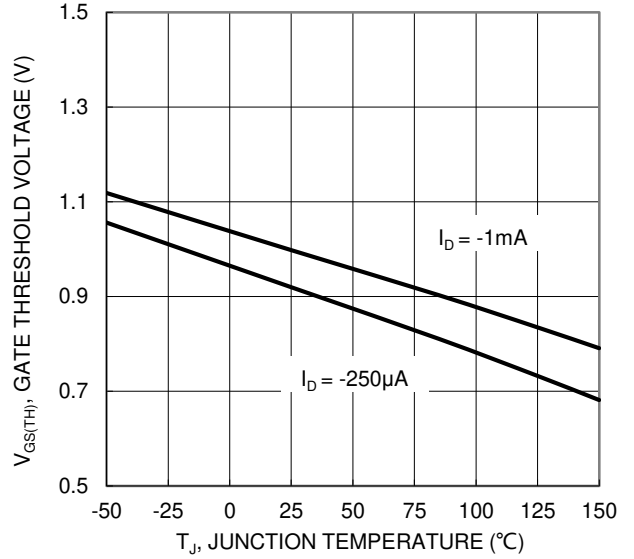


Figure 8. Gate Threshold Variation vs. Junction Temperature

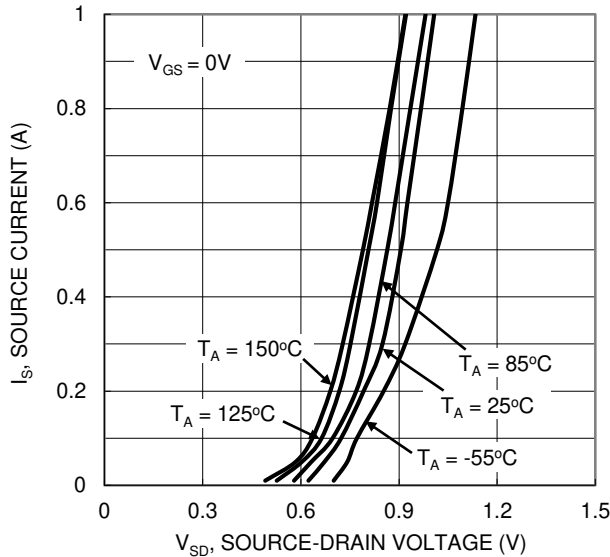


Figure 9. Diode Forward Voltage vs. Current

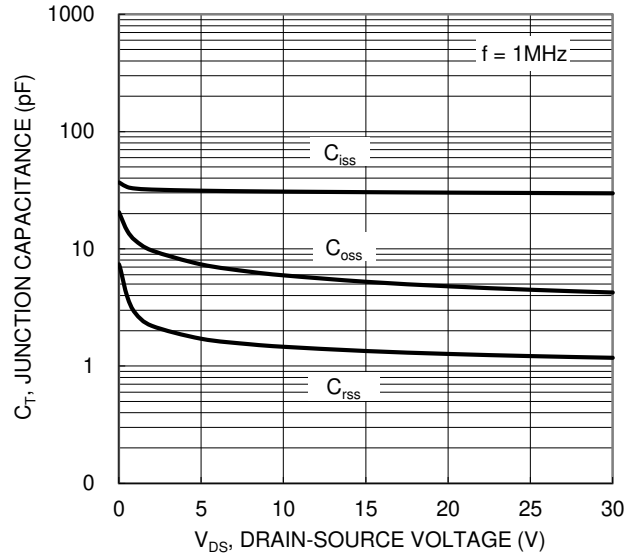


Figure 10. Typical Junction Capacitance

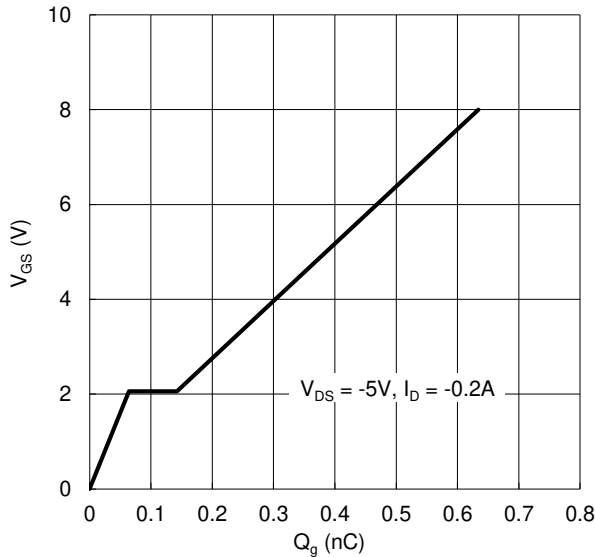


Figure 11. Gate Charge

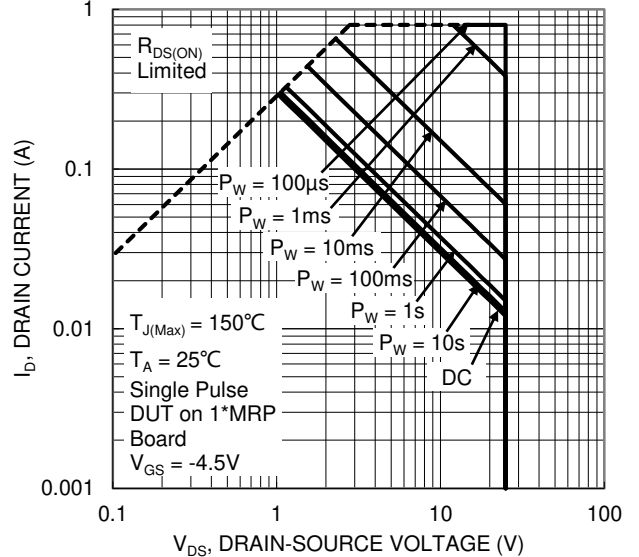


Figure 12. SOA, Safe Operation Area

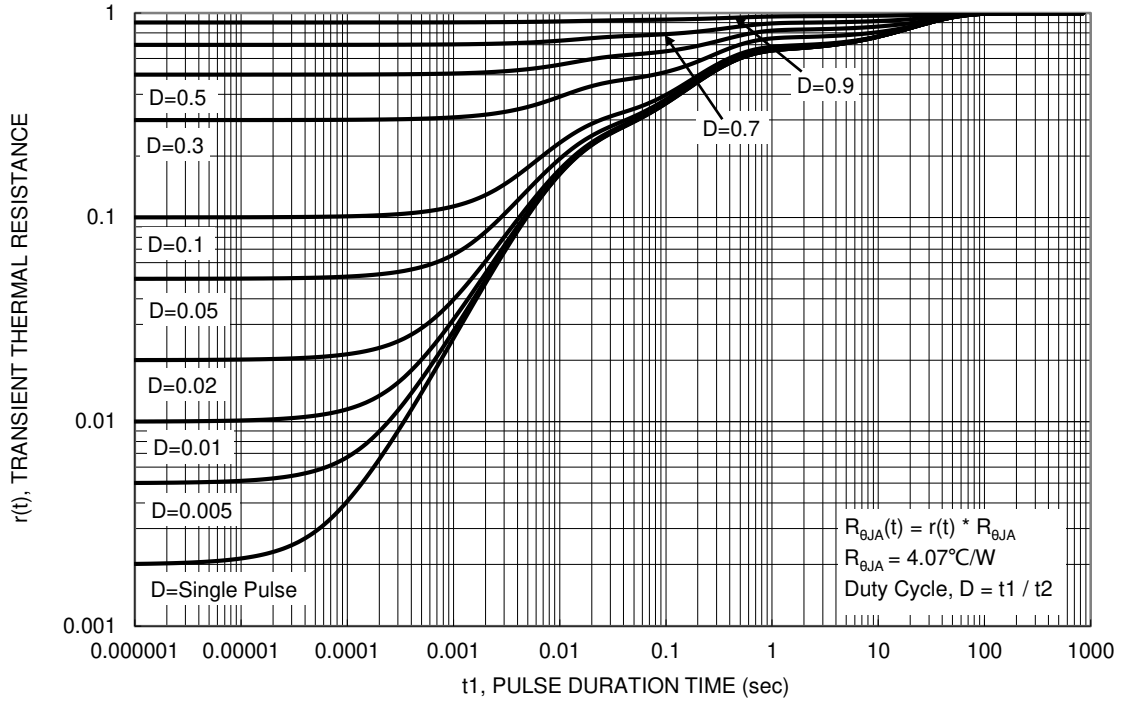
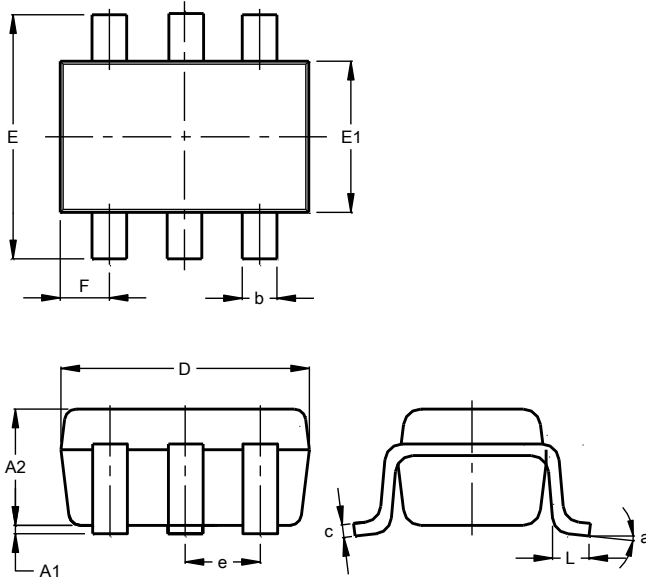


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

SOT363

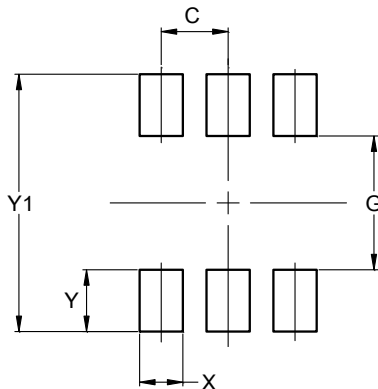


SOT363			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.10	0.30	0.25
c	0.10	0.22	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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

SOT363



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.420
Y	0.600
Y1	2.500

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