

## Product Summary

$BV_{DSS}$	$R_{DS(on)}$ max	$I_D$ max $T_A = +25^\circ C$
60V	2.0Ω @ $V_{GS} = 4.5V$	350mA
	2.5Ω @ $V_{GS} = 2.5V$	300mA

## Features and Benefits

- Dual N-Channel MOSFET
- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package
- **ESD Protected Gate**
- **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 refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>**
- **An Automotive-Compliant Part is Available Under Separate Datasheet ([DMN62D0UDWQ](#))**

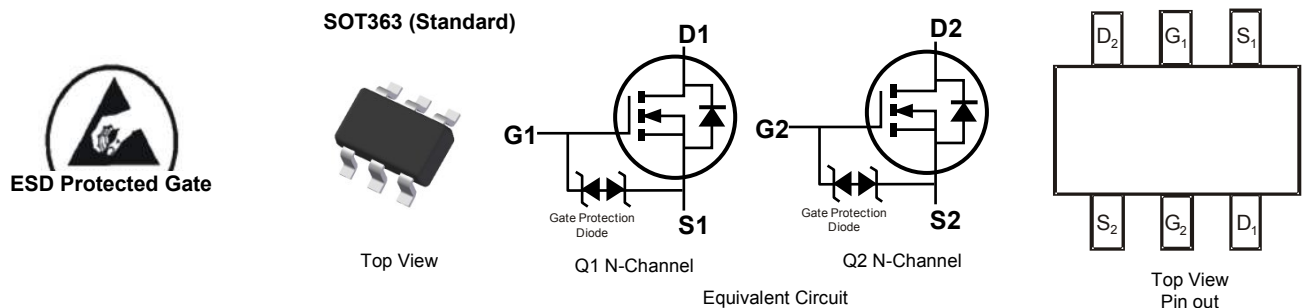
## Description and Applications

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

- Motor Control
- Power Management Functions

## Mechanical Data

- Case: SOT363 (Standard)
- Case Material: Molded Plastic. "Green" Molding Compound. 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)

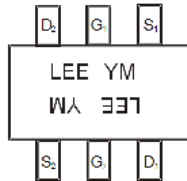


## Ordering Information (Note 4)

Part Number	Case	Packaging
DMN62D0UDW-7	SOT363 (Standard)	3,000/Tape & Reel
DMN62D0UDW-13	SOT363 (Standard)	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



LEE = Product Type Marking Code  
 YM = Date Code Marking  
 Y or  $\bar{Y}$  = Year (ex: I = 2021)  
 M or  $\bar{M}$  = Month (ex: 9 = September)

### Date Code Key

Year	2016	.....	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	D	.....	I	J	K	L	M	N	O	P	R	S
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 (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit	
Drain-Source Voltage	$V_{DSS}$	60	V	
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V	
Continuous Drain Current (Note 6) $V_{GS} = 4.5\text{V}$	Steady State	$T_A = +25^\circ\text{C}$	350	mA
		$T_A = +70^\circ\text{C}$	290	
Maximum Continuous Body Diode Forward Current (Note 6)	$I_S$	350	mA	

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

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	$P_D$	320	mW
Thermal Resistance, Junction to Ambient (Note 5)	Steady State $R_{\theta JA}$	400	$^\circ\text{C}/\text{W}$
Total Power Dissipation (Note 6)	$P_D$	410	mW
Thermal Resistance, Junction to Ambient (Note 6)	Steady State $R_{\theta JA}$	312	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

Notes: 5. Device mounted on FR-4 PCB, with minimum recommended pad layout  
 6. Device mounted on 1" x 1" FR-4 PCB with high coverage 2oz. Copper, single sided.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 7)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	60	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	1.0	$\mu A$	$V_{DS} = 60V, V_{GS} = 0V$
Gate-Source Leakage	$I_{GSS}$	—	—	$\pm 10$	$\mu A$	$V_{GS} = \pm 20V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	0.5	—	1.0	V	$V_{DS} = 10V, I_D = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	1.2	2.0	$\Omega$	$V_{GS} = 4.5V, I_D = 0.1A$
			1.4	2.5		$V_{GS} = 2.5V, I_D = 0.05A$
			1.8	3.0		$V_{GS} = 1.8V, I_D = 0.05A$
Forward Transconductance	$ Y_{fs} $	—	1.8	—	S	$V_{DS} = 10V, I_D = 0.2A$
Diode Forward Voltage	$V_{SD}$	—	0.8	1.3	V	$V_{GS} = 0V, I_S = 115mA$
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>						
Input Capacitance	$C_{iss}$	—	32	—	pF	$V_{DS} = 30V, V_{GS} = 0V$ $f = 1.0MHz$
Output Capacitance	$C_{oss}$	—	3.9	—	pF	
Reverse Transfer Capacitance	$C_{rss}$	—	2.4	—	pF	
Gate Resistance	$R_g$	—	101	—	$\Omega$	$f = 1MHz, V_{GS} = 0V, V_{DS} = 0V$
Total Gate Charge	$Q_g$	—	0.5	—	nC	$V_{GS} = 4.5V, V_{DS} = 10V,$ $I_D = 250mA$
Gate-Source Charge	$Q_{gs}$	—	0.09	—	nC	
Gate-Drain Charge	$Q_{gd}$	—	0.09	—	nC	
Turn-On Delay Time	$t_{D(on)}$	—	2.4	—	ns	$V_{DD} = 30V, V_{GS} = 10V,$ $R_G = 25\Omega, I_D = 200mA$
Turn-On Rise Time	$t_R$	—	2.5	—	ns	
Turn-Off Delay Time	$t_{D(off)}$	—	22.6	—	ns	
Turn-Off Fall Time	$t_F$	—	12.5	—	ns	

Notes: 7. Short duration pulse test used to minimize self-heating effect.  
8. Guaranteed by design. Not subject to product testing.

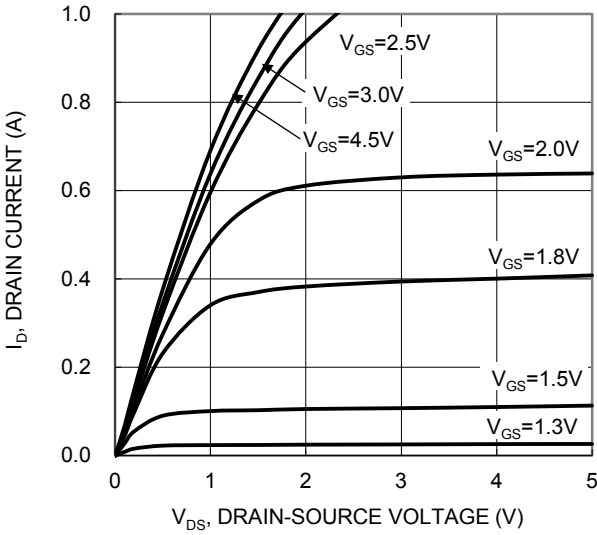


Figure 1. Typical Output Characteristic

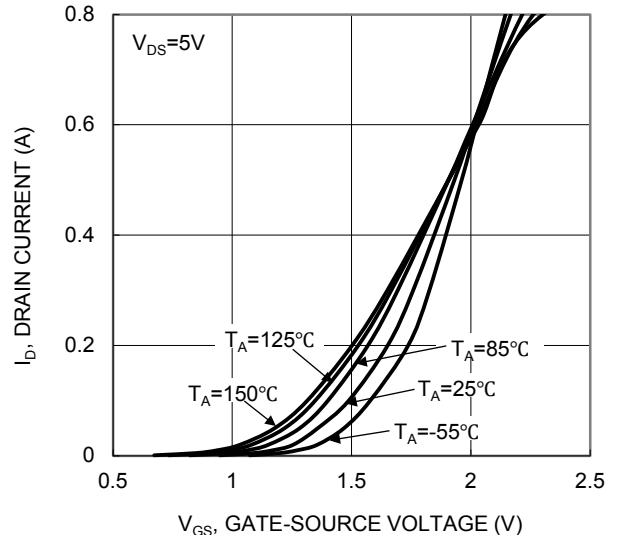


Figure 2. Typical Transfer Characteristic

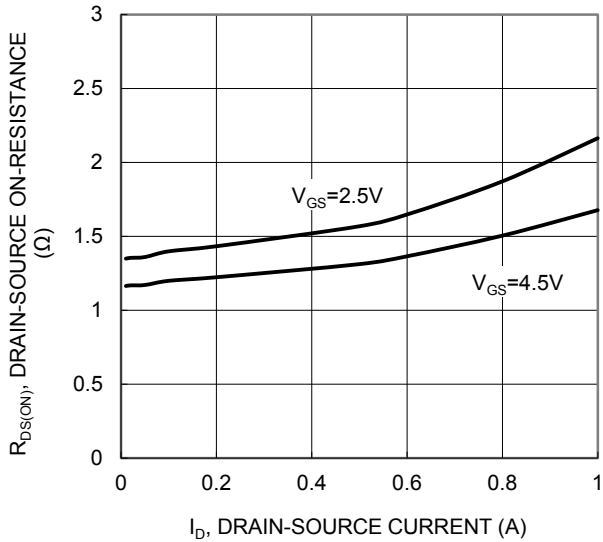


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

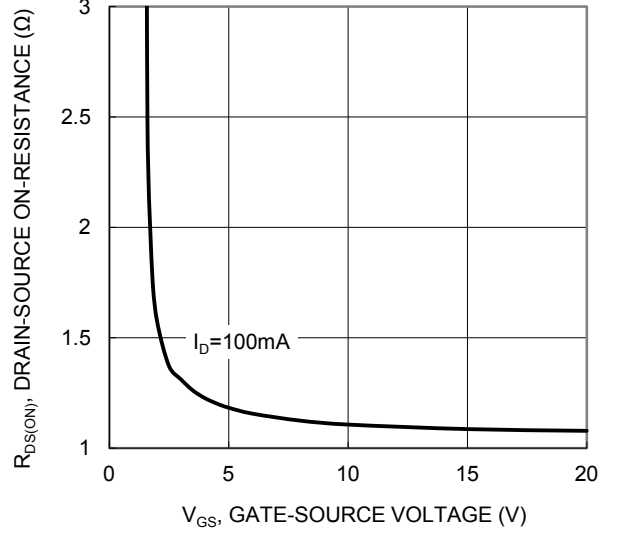


Figure 4. Typical Transfer Characteristic

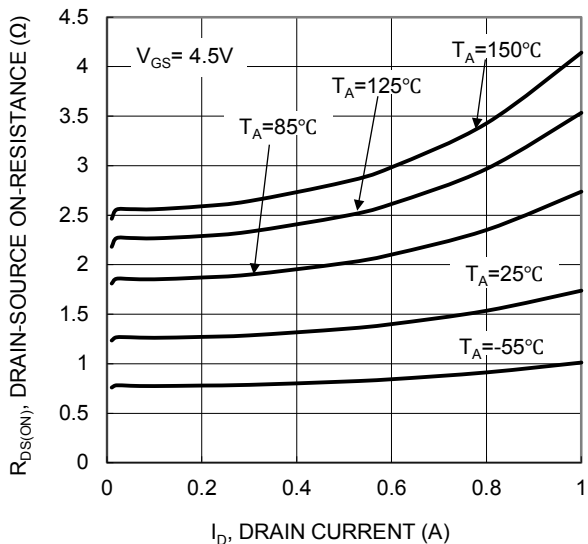


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

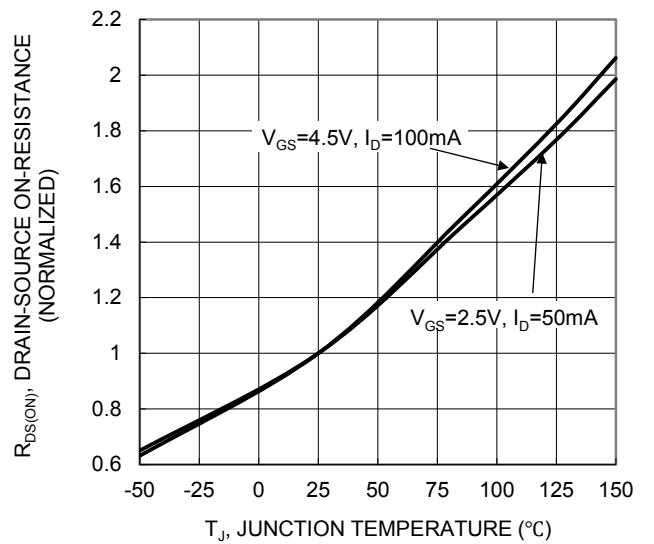


Figure 6. On-Resistance Variation with Junction Temperature

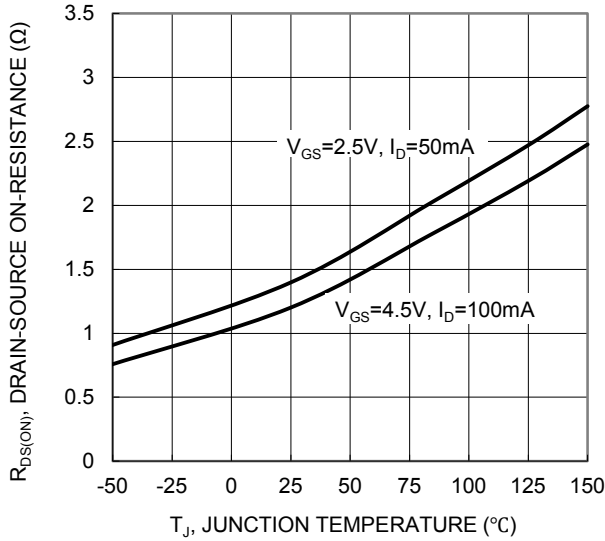


Figure 7. On-Resistance Variation with Junction Temperature

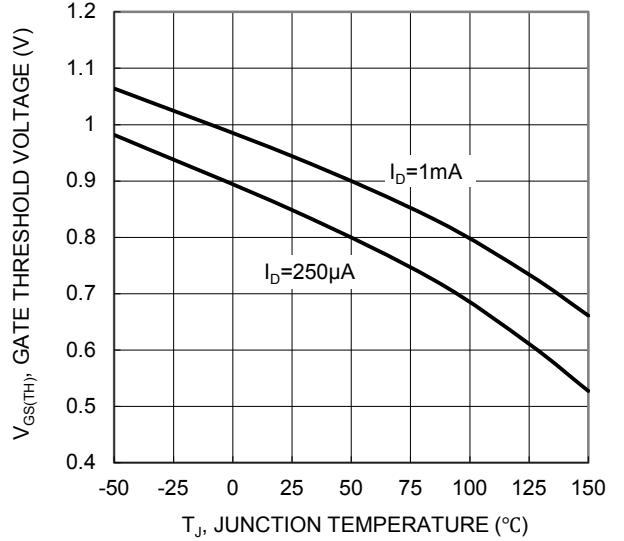


Figure 8. Gate Threshold Variation vs. Junction Temperature

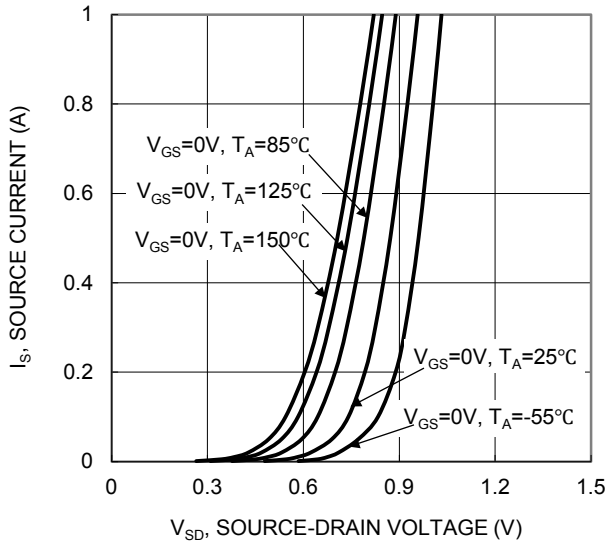


Figure 9. Diode Forward Voltage vs. Current

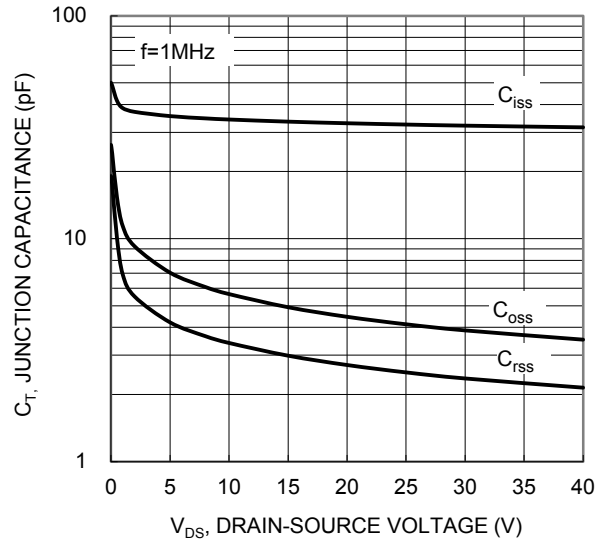


Figure 10. Typical Junction Capacitance

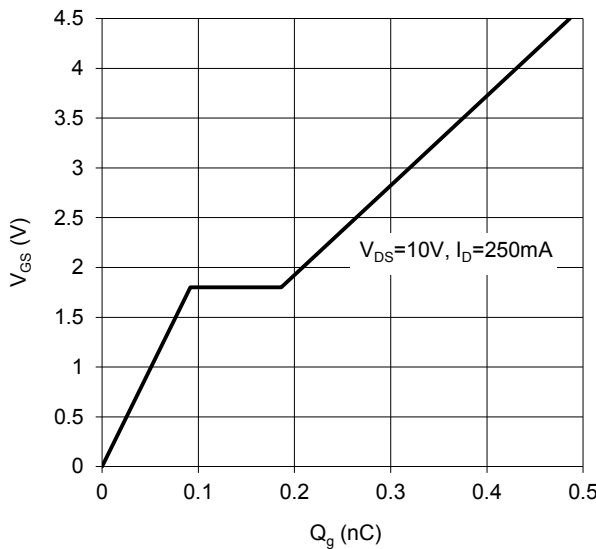


Figure 11. Gate Charge

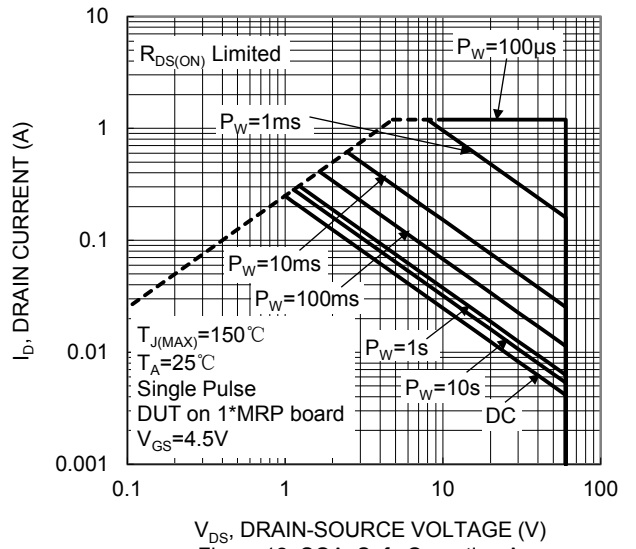


Figure 12. SOA, Safe Operation Area

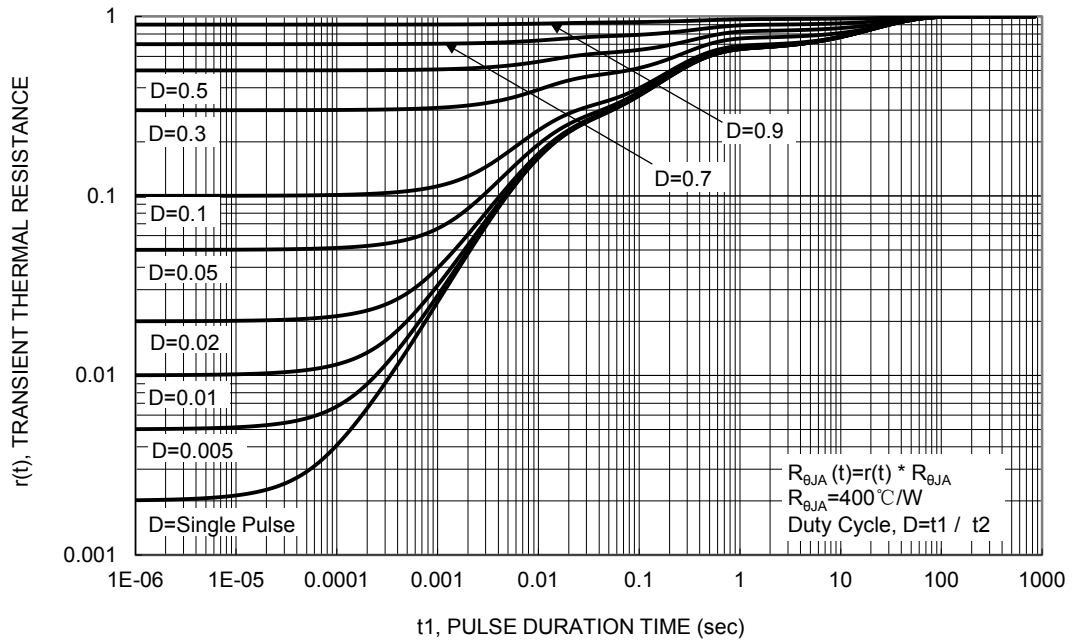
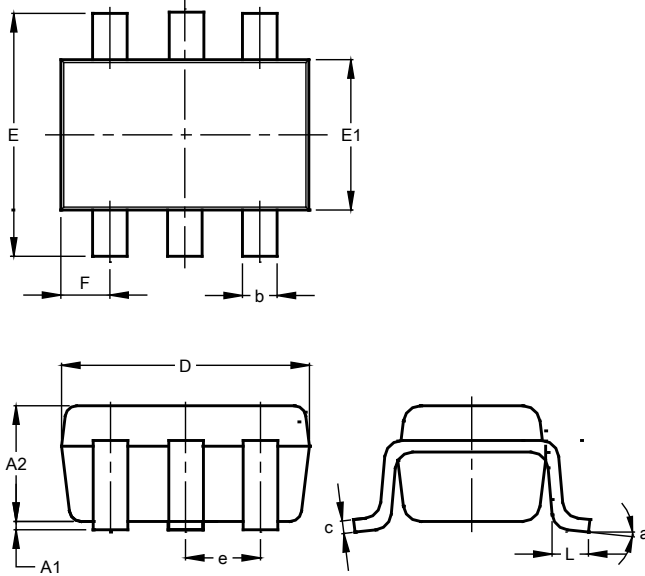


Figure 13. Transient Thermal Resistance

## Package Outline Dimensions

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

**SOT363 (Standard)**

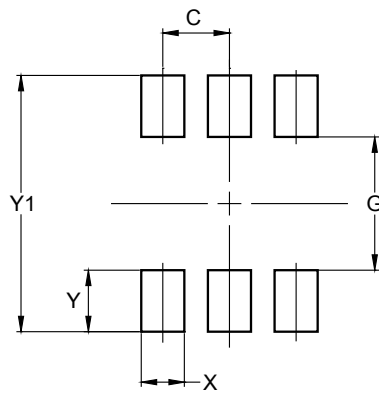


SOT363 (Standard)			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.80	1.00	0.90
b	0.10	0.35	0.225
c	0.08	0.22	0.15
D	1.80	2.20	2.00
E	2.00	2.45	2.225
E1	1.15	1.35	1.25
e	--	--	0.65
F	0.25	0.45	0.35
L	0.25	0.46	0.355
a	0°	8°	--
All Dimensions in mm			

## Suggested Pad Layout

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

**SOT363 (Standard)**



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

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