

DUAL N-CHANNEL ENHANCEMENT MODE MOSFET
Product Summary

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

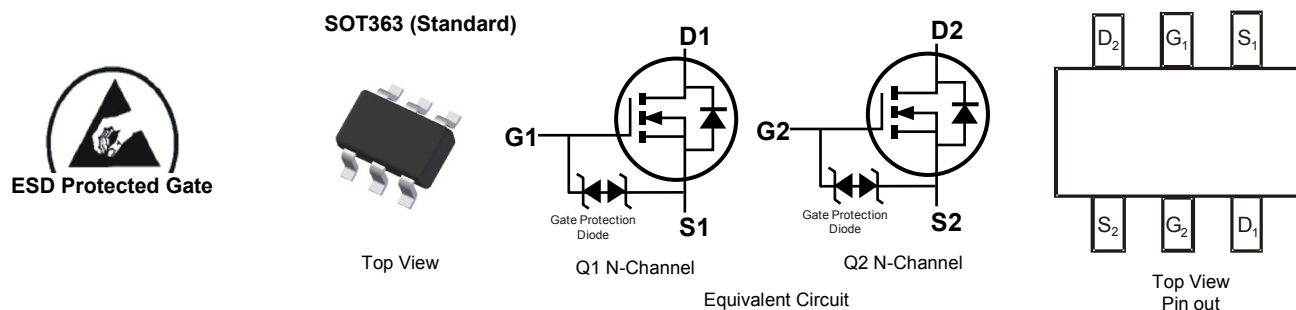
Description and Applications

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

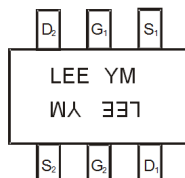
- Case: SOT363 (Standard)
- Case Material: Molded Plastic. "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208 ③
- 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 Y = Year (ex: I = 2021)
 M or 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°C, unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V _{DSS}	60	V
Gate-Source Voltage			V _{GSS}	±20	V
Continuous Drain Current (Note 6) V _{GS} = 4.5V	Steady State	T _A = +25°C	I _D	350	mA
		T _A = +70°C		290	
Maximum Continuous Body Diode Forward Current (Note 6)			I _S	350	mA

Thermal Characteristics (@ T_A = +25°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 _{θJA}	400	°C/W
Total Power Dissipation (Note 6)			P _D	410	mW
Thermal Resistance, Junction to Ambient (Note 6)	Steady State		R _{θJA}	312	°C/W
Operating and Storage Temperature Range			T _J , T _{STG}	-55 to +150	°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
OFF CHARACTERISTICS (Note 7)						
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	μA	$V_{DS} = 60V, V_{GS} = 0V$
Gate-Source Leakage	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 20V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 7)						
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	Ω	$V_{GS} = 4.5V, I_D = 0.1A$
			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	$V_{GS} = 0V, I_S = 115mA$
DYNAMIC CHARACTERISTICS (Note 8)						
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	—	Ω	$f = 1MHz, V_{GS} = 0V, V_{DS} = 0V$
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.

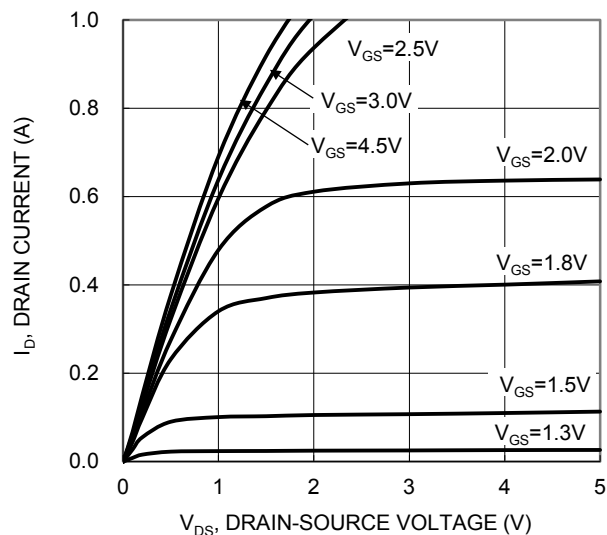


Figure 1. Typical Output Characteristic

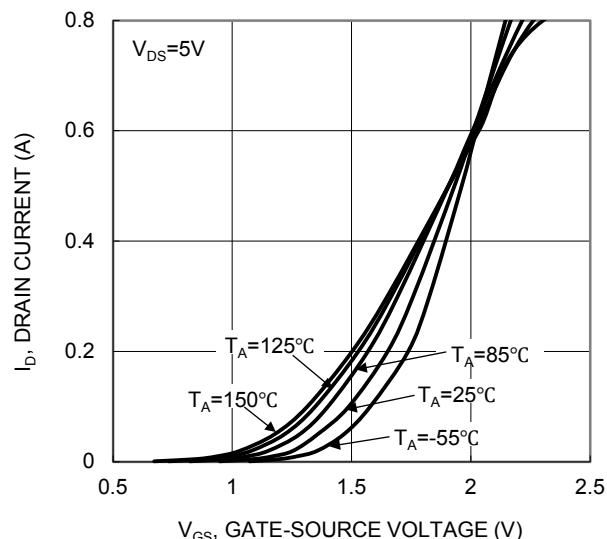


Figure 2. Typical Transfer Characteristic

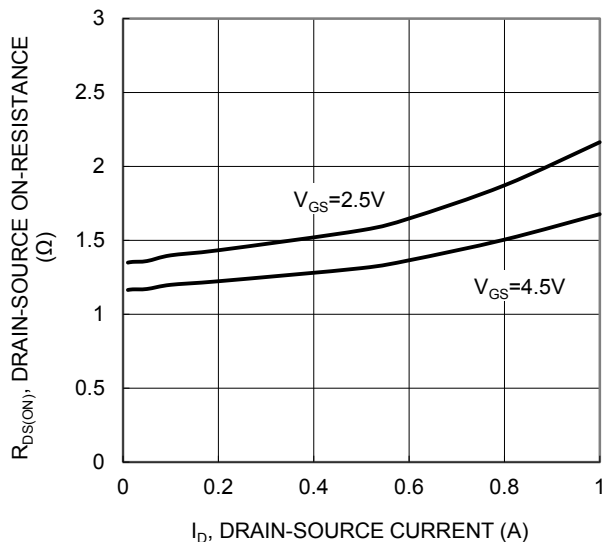


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

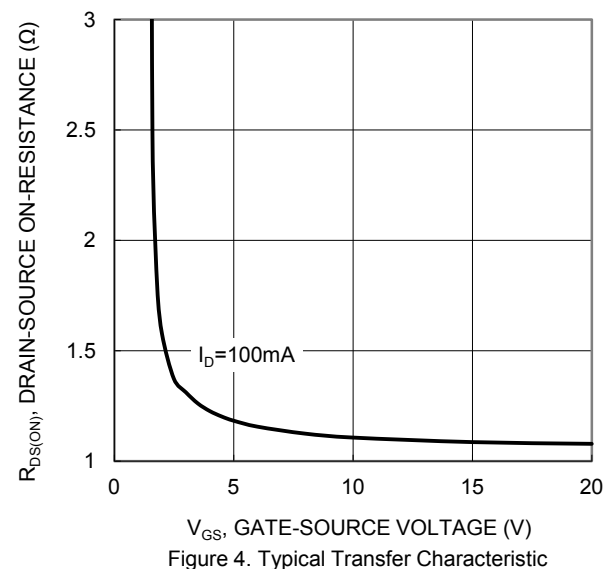


Figure 4. Typical Transfer Characteristic

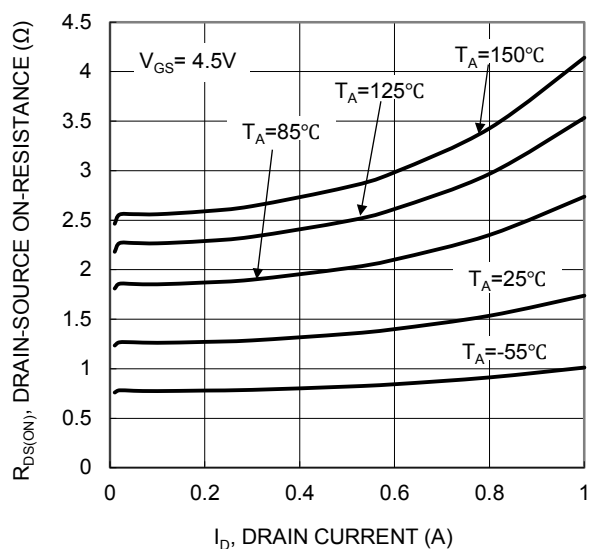


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

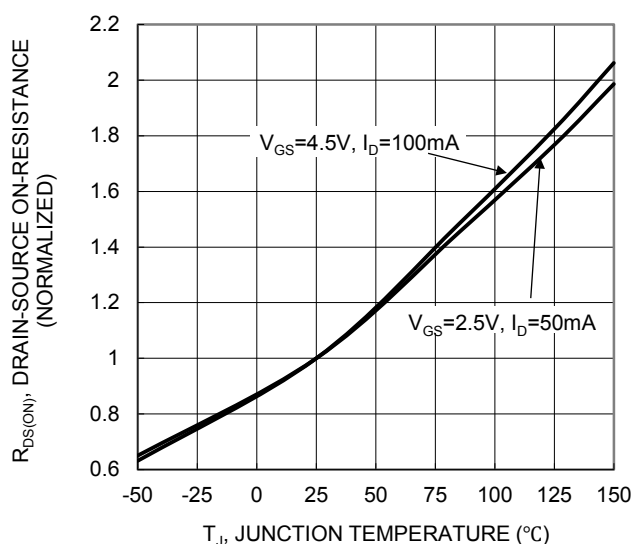
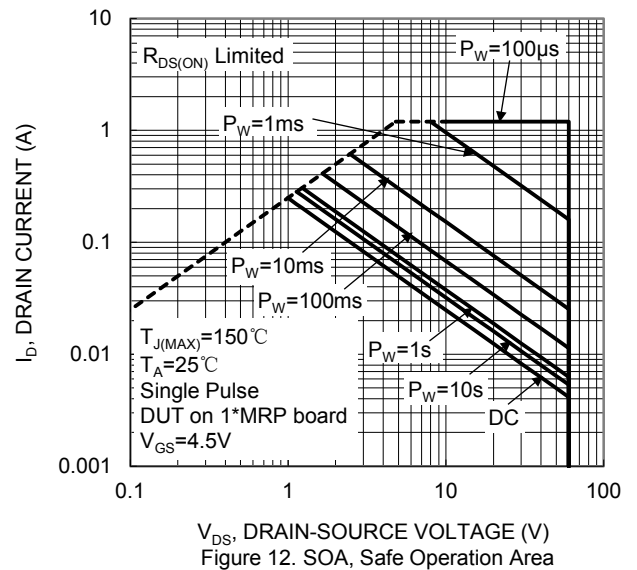
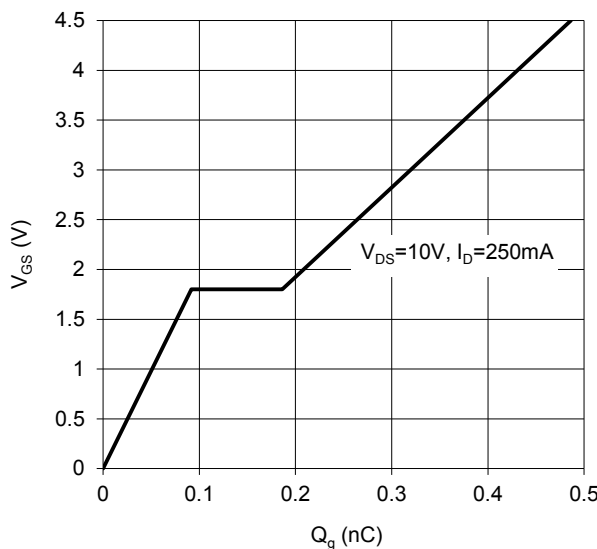
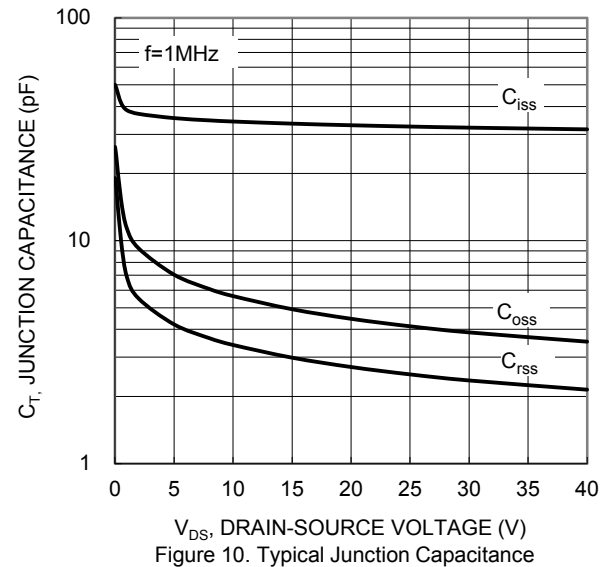
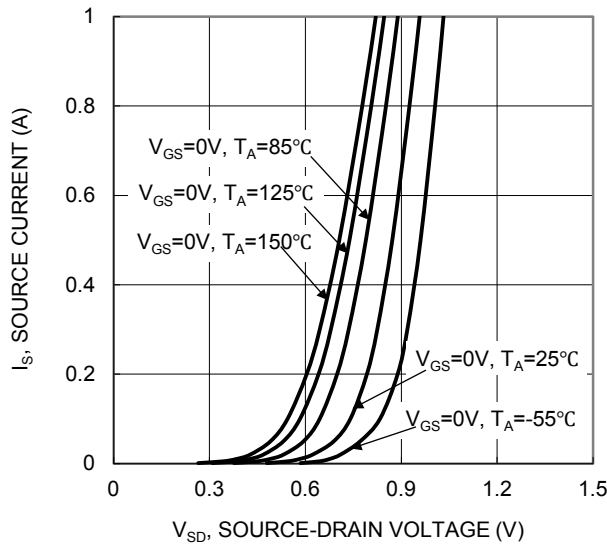
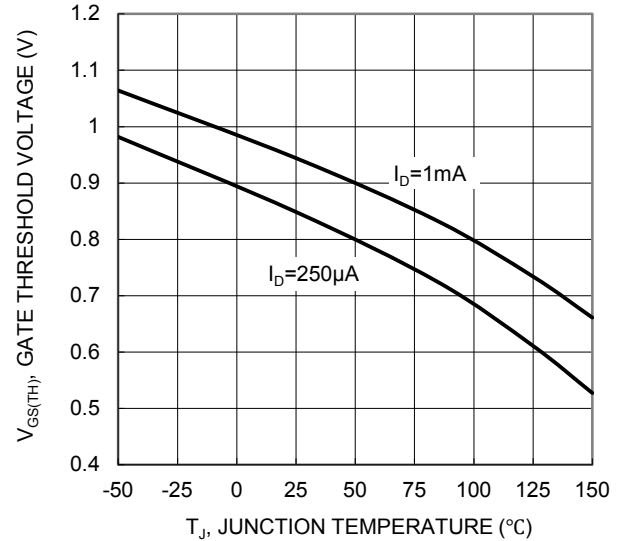
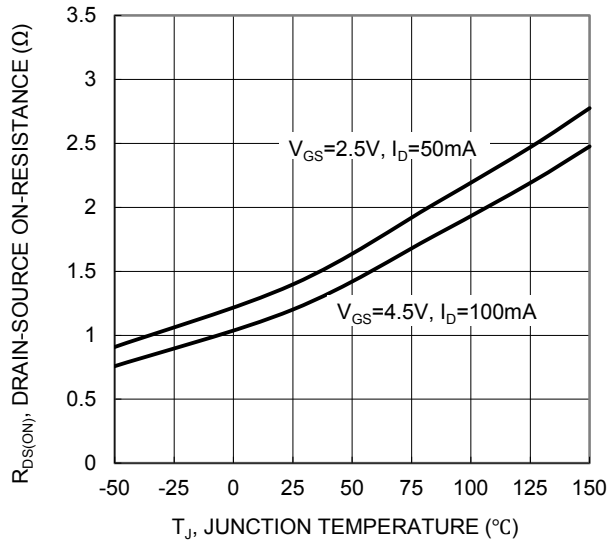


Figure 6. On-Resistance Variation with Junction Temperature



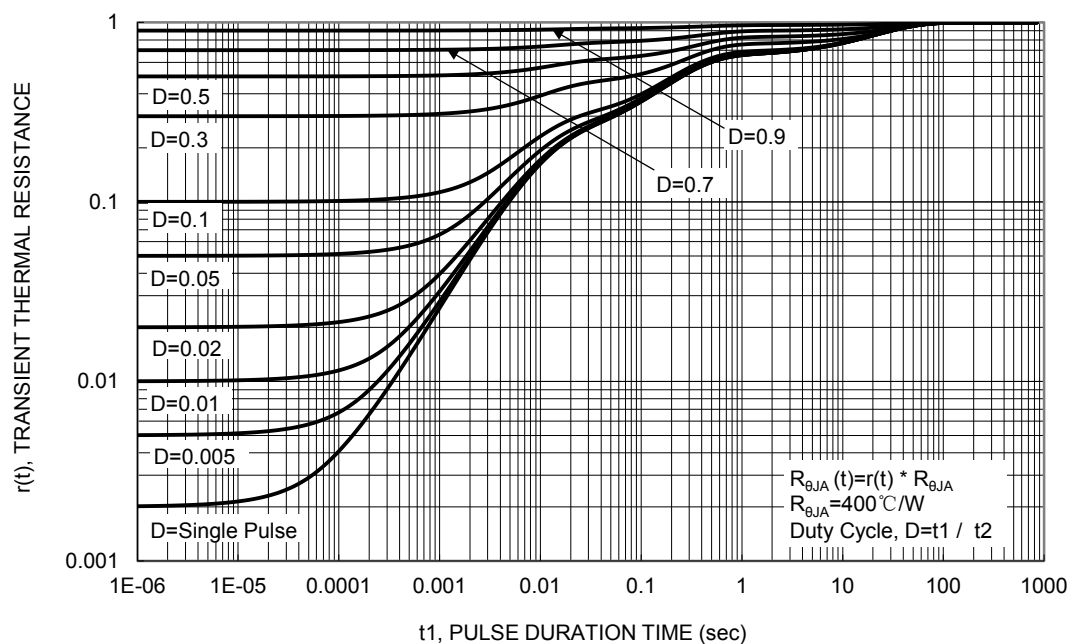
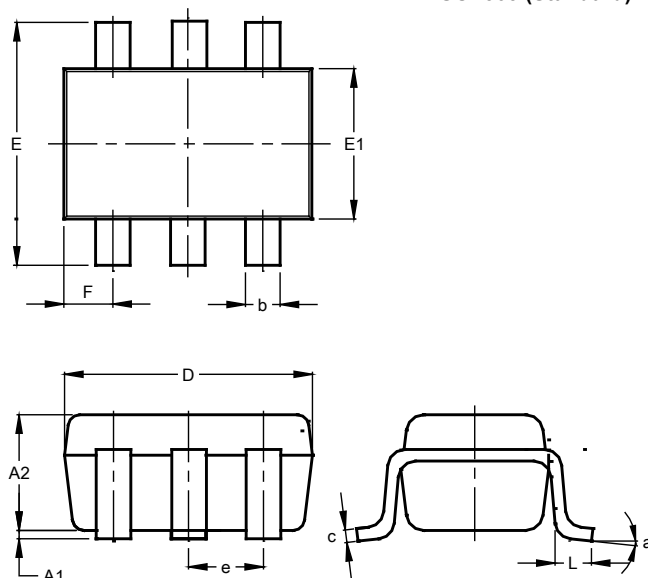


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

SOT363 (Standard)

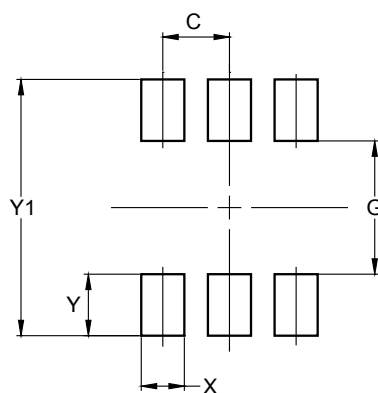


SOT363 (Standard)			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.80	1.00	0.90
b	0.10	0.35	0.225
c	0.08	0.22	0.15
D	1.80	2.20	2.00
E	2.00	2.45	2.225
E1	1.15	1.35	1.25
e	--	--	0.65
F	0.25	0.45	0.35
L	0.25	0.46	0.355
a	0°	8°	--
All Dimensions in mm			

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