Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

Product Summary

BV_{DSS}	$R_{DS(ON)}$ Max	I_D Max T_A = +25°C
60V	3Ω @ V_{GS} = 5V	0.3A

Features

- 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**
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Description and Applications

This MOSFET is designed to meet the stringent requirements of Automotive applications. It is qualified to AEC-Q101, supported by a PPAP and is ideal for use in:

- Motor Control
- Power Management Functions

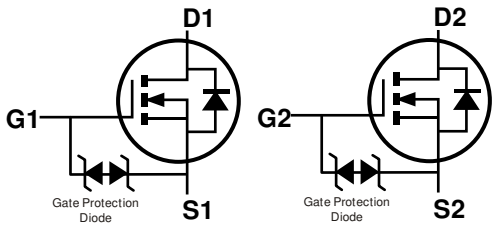
Mechanical Data

- Case: SOT363
- 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 e3
- Terminal Connections: See Diagram
- Weight: 0.006 grams (Approximate)

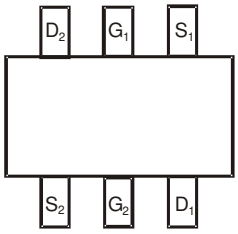
ESD Protected up to 2kV

SOT363

Top View



Equivalent Circuit



Top View

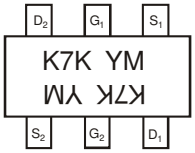
Ordering Information (Note 5)

Part Number	Case	Packaging
DMN601DWKQ-7	SOT363	3,000/Tape & Reel

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See http://www.diodes.com/quality/lead_free.html 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to https://www.diodes.com/quality/product-compliance-definitions/.
5. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information

SOT363



K7K = Product Type Marking Code
YM = Date Code Marking
Y or $\overline{Y}$ = Year (ex: E = 2017)
M = Month (ex: 9 = September)

Date Code Key

Year	2005	2006	---	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Code	S	T	---	C	D	E	F	G	H	I	J	K	L

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
Drain Current (Note 6)	Continuous	I_D	305	mA
	Pulsed (Note 7)		800	

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

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 6)	P_D	200	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	625	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
Drain-Source Breakdown Voltage	BV_{DSS}	60	—	—	V	V_{GS} = 0V, I_D = 10μA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	μA	V_{DS} = 60V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±10	μA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	$V_{GS(TH)}$	1.0	1.6	2.5	V	V_{DS} = 10V, I_D = 1mA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	— —	2.0 3.0	Ω	V_{GS} = 10V, I_D = 0.5A V_{GS} = 5V, I_D = 0.05A
Forward Transfer Admittance	$\|Y_{fs}\|$	80	—	—	ms	V_{DS} =10V, I_D = 0.2A
Diode Forward Voltage (Note 9)	V_{SD}	0.5	—	1.4	V	V_{GS} = 0V, I_S = 115mA
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C_{iss}	—	30	50	pF	V_{DS} = 25V, V_{GS} = 0V f = 1.0MHz
Output Capacitance	C_{oss}	—	4.2	25	pF	
Reverse Transfer Capacitance	C_{rss}	—	2.9	5.0	pF	
Gate Resistance	R_g	—	133	—	Ω	f = 1MHz , V_{GS} = 0V, V_{DS} = 0V
Total Gate Charge	Q_g	—	304	—	pC	V_{GS} = 4.5V, V_{DS} = 10V, I_D = 250mA
Gate-Source Charge	Q_{gs}	—	203	—	pC	
Gate-Drain Charge	Q_{gd}	—	84	—	pC	
Turn-On Delay Time	$t_{D(ON)}$	—	3.9	—	ns	V_{DD} = 30V, V_{GS} = 10V, R_G = 25Ω, I_D = 200mA
Turn-On Rise Time	t_R	—	3.4	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	15.7	—	ns	
Turn-Off Fall Time	t_F	—	9.9	—	ns	

Notes:
6. Device mounted on FR-4 PCB.
7. Pulse width ≤10μS, duty cycle ≤1%.
8. Short duration pulse test used to minimize self-heating effect.
9. Guaranteed by design. Not subject to product testing.

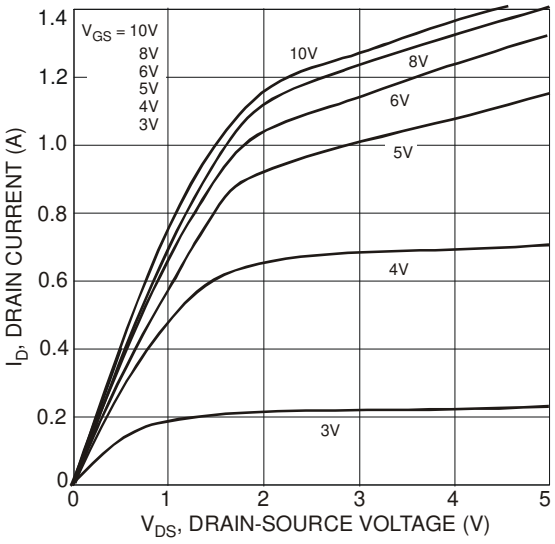


Figure 1 Typical Output Characteristics

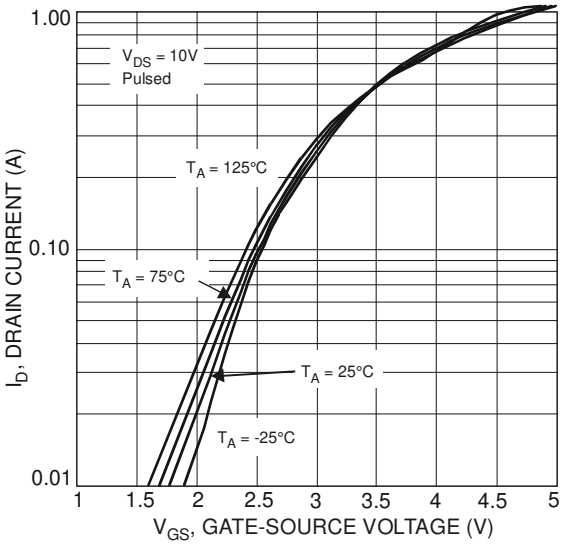


Figure 2 Typical Transfer Characteristics

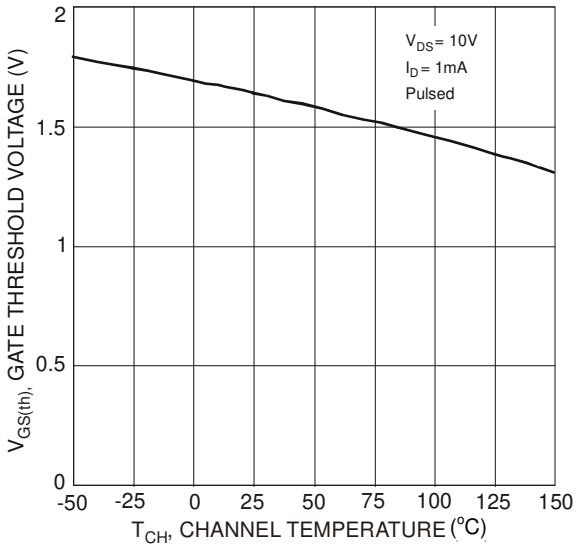


Figure 3 Gate Threshold Voltage vs. Channel Temperature

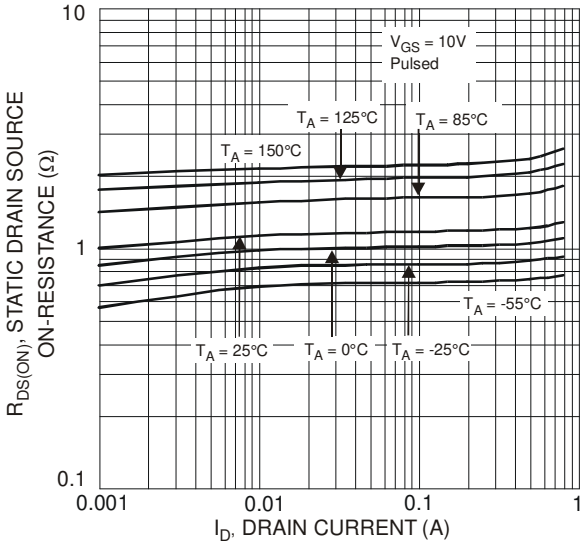


Figure 4 Static Drain-Source On-Resistance vs. Drain Current

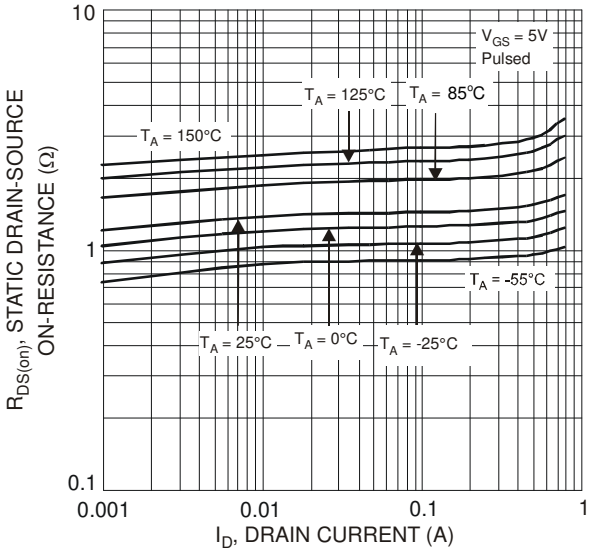


Figure 5 Static Drain-Source On-Resistance vs. Drain Current

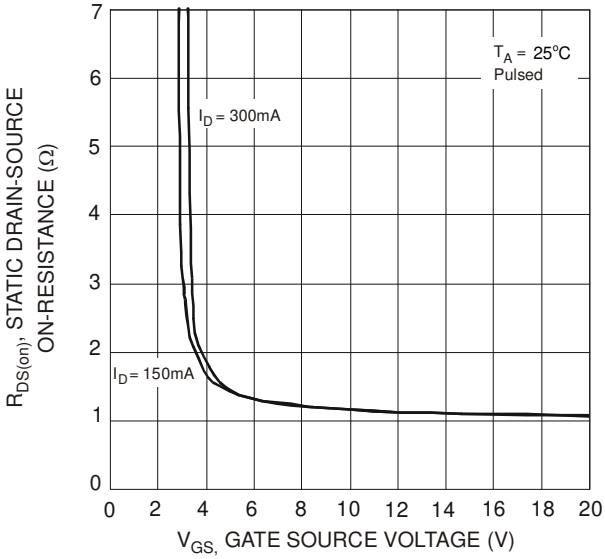


Figure 6 Static Drain-Source On-Resistance vs. Gate-Source Voltage

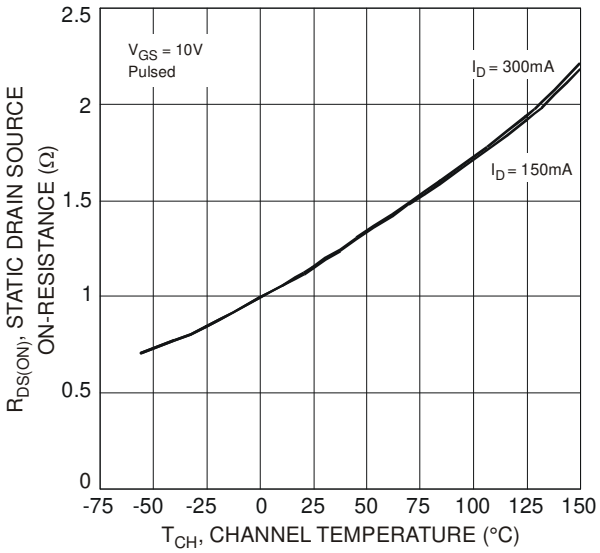


Figure 7 Static Drain-Source On-State Resistance vs. Channel Temperature

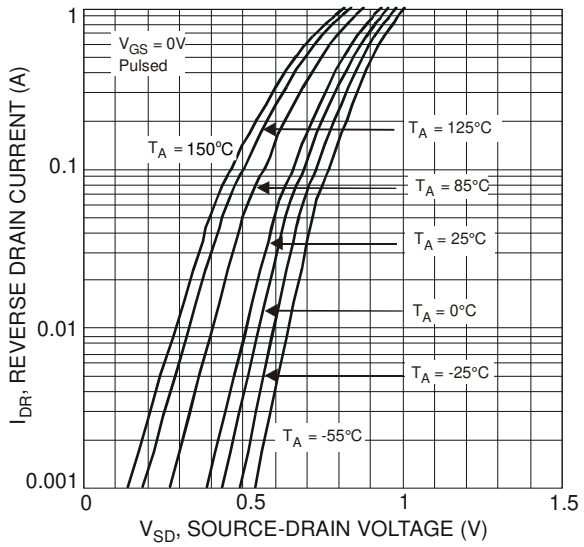


Figure 8 Reverse Drain Current vs. Source-Drain Voltage

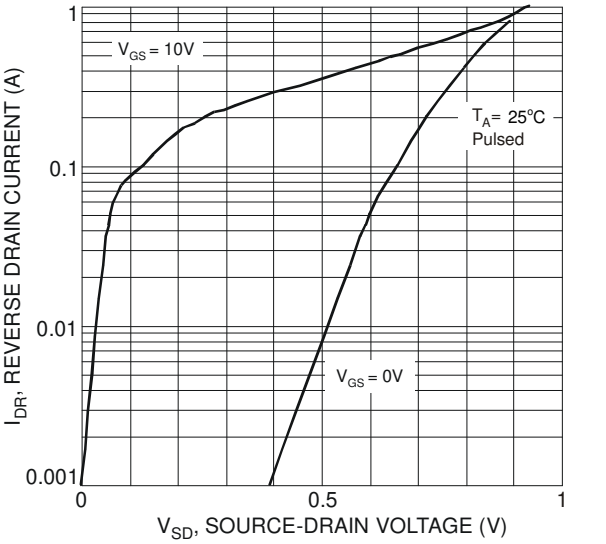


Figure 9 Reverse Drain Current vs. Source-Drain Voltage

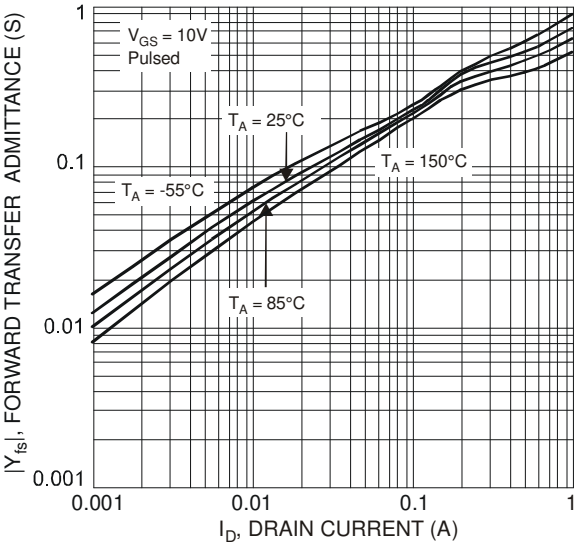


Figure 10 Forward Transfer Admittance vs. Drain Current

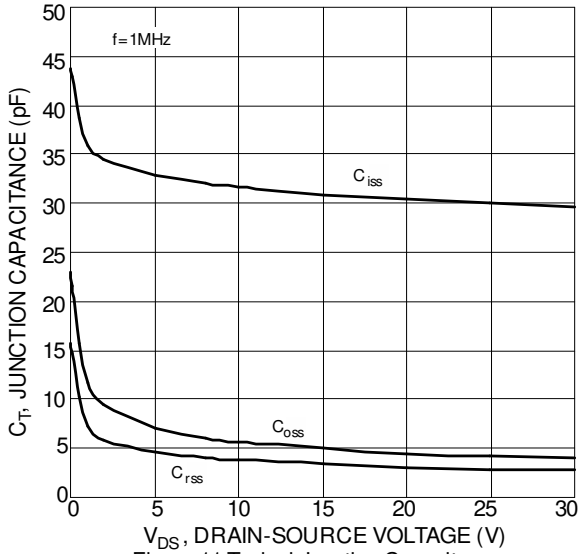


Figure 11 Typical Junction Capacitance

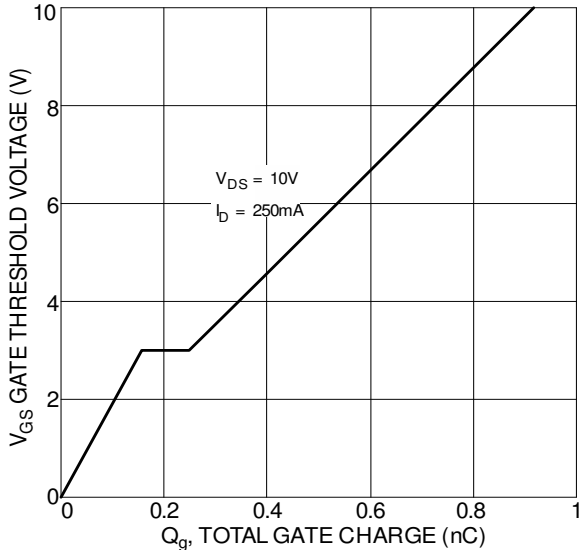


Figure 12 Gate Charge

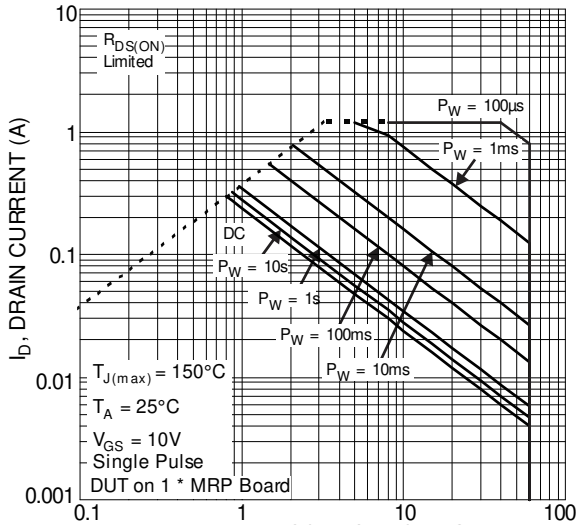


Figure 13 SOA, Safe Operation Area

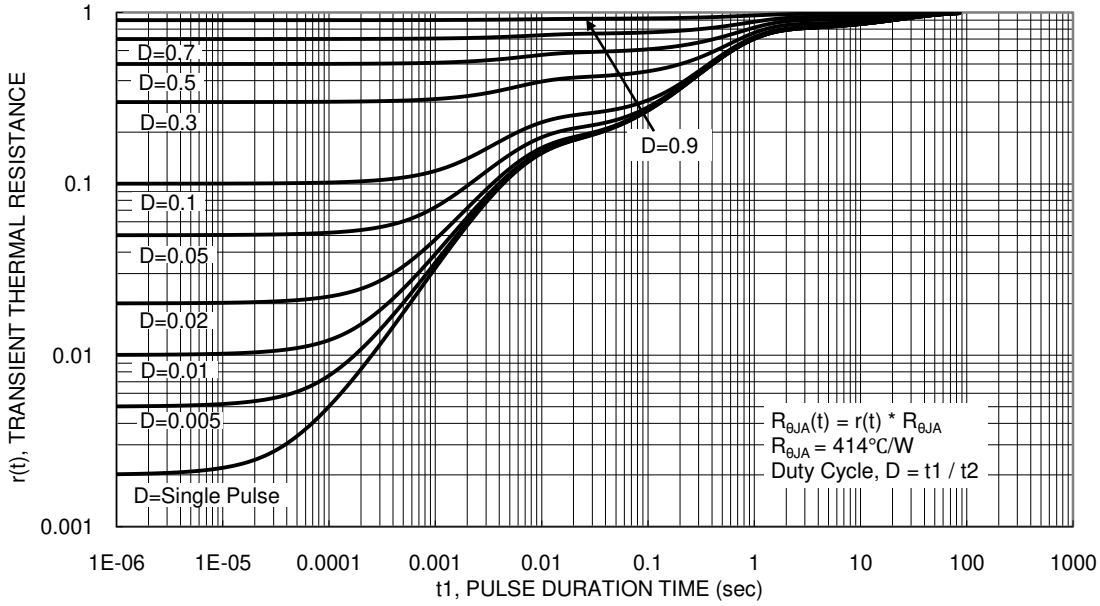
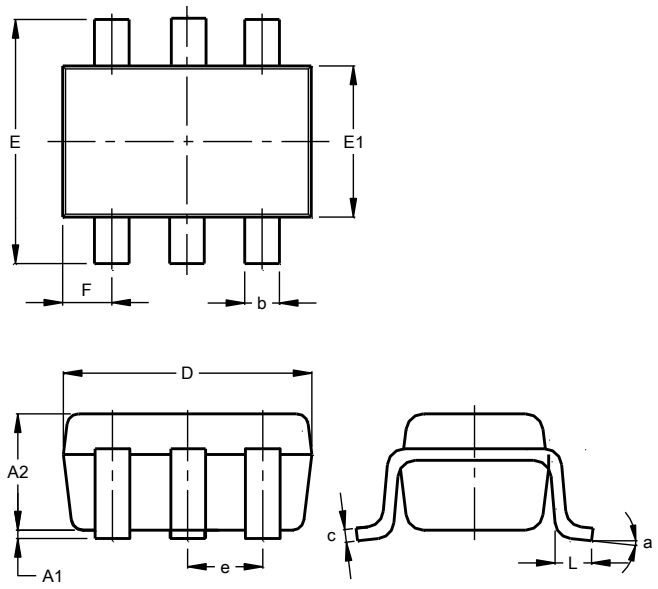


Figure 14 Transient Thermal Resistance

Package Outline Dimensions

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

SOT363

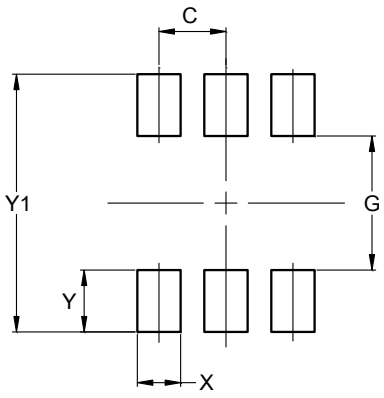


SOT363			
Dim	**Min**	**Max**	**Typ**
A1	0.00	0.10	0.05
A2	0.90	1.00	1.00
b	0.10	0.30	0.25
c	0.10	0.22	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
F	0.40	0.45	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

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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