DMN62D2UW-7 Datasheet

https://www.DiGi-Electronics.com

DiGi Electronics Part Number	DMN62D2UW-7-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	DMN62D2UW-7
Description	MOSFET BVDSS: 41V~60V SOT323 T&R
Detailed Description	N-Channel 60 V 391mA (Ta) 400mW (Ta) Surface Mount SOT-323

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Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
DMN62D2UW-7	Diodes Incorporated
Series:	Product Status:
-	Active
FET Type:	Technology:
N-Channel	MOSFET (Metal Oxide)
Drain to Source Voltage (Vdss):	Current - Continuous Drain (Id) @ 25°C:
60 V	391mA (Ta)
Drive Voltage (Max Rds On, Min Rds On):	Rds On (Max) @ Id, Vgs:
1.8V, 5V	2Ohm @ 50mA, 5V
Vgs(th) (Max) @ Id:	Gate Charge (Qg) (Max) @ Vgs:
1V @ 250µA	0.8 nC @ 4.5 V
Vgs (Max):	Input Capacitance (Ciss) (Max) @ Vds:
±20V	41 pF @ 30 V
FET Feature:	Power Dissipation (Max):
-	400mW (Ta)
Operating Temperature:	Mounting Type:
-55°C ~ 150°C (TJ)	Surface Mount
Supplier Device Package:	Package / Case:
SOT-323	SC-70, SOT-323

Environmental & Export classification

RoHS Status:	REACH Status:
ROHS3 Compliant	REACH Unaffected

Lead-free Green

DMN62D2UW

60V N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

BV_{DSS}	$R_{DS(ON)}$ Max	I_D Max T_A = +25°C
60V	2.0Ω @ V_{GS} = 5.0V	391mA
	2.5Ω @ V_{GS} = 2.5V	368mA
	4.0Ω @ V_{GS} = 1.8V	310mA

Description and Applications

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

- Motor controls
- Power-management functions
- Backlighting

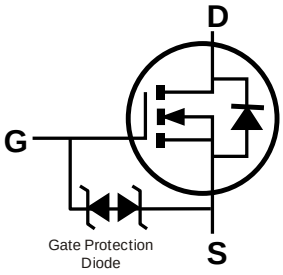
Features and Benefits

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- 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-Q100/101/104/200, 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/**

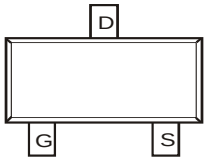
Mechanical Data

- Package: SOT323
- 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 Annealed over Alloy 42 Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.006 grams (Approximate)

Top View



Equivalent Circuit



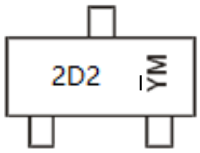
Top View

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DMN62D2UW-7	SOT323	3,000	Tape & Reel
DMN62D2UW-13	SOT323	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



2D2 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: K = 2023)
M = Month (ex: 9 = September)

Date Code Key

Year	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Code	J	K	L	M	N	P	R	S	T	U	V	W

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 5) V_{GS} = 5.0V	Steady State	T_A = +25°C T_A = +70°C	I_D	391 313	mA
Maximum Continuous Body Diode Forward Current (Note 5)			I_S	391	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%) (Note 5)			I_{DM}	1.2	A

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

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 6)		P_D	0.4	mW
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	281	°C/W
Total Power Dissipation (Note 5)		P_D	0.6	mW
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	199	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Notes: 5. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
6. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

Electrical Characteristics (@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}	60	—	—	V	V_{GS} = 0V, I_D = 250µA
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} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	0.5	—	1.0	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	— — —	1.1 1.3 1.7	2.0 2.5 4.0	Ω	V_{GS} = 5.0V, I_D = 0.05A V_{GS} = 2.5V, I_D = 0.05A V_{GS} = 1.8V, I_D = 0.05A
Diode Forward Voltage	V_{SD}	—	0.7	1.4	V	V_{GS} = 0V, I_S = 115mA
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	41	—	pF	V_{DS} = 30V, V_{GS} = 0V f = 1.0MHz
Output Capacitance	C_{oss}	—	5.4	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	4.2	—	pF	
Gate Resistance	R_g	—	52	—	Ω	f = 1MHz, V_{GS} = 0V, V_{DS} = 0V
Total Gate Charge	Q_g	—	0.8	—	nC	V_{GS} = 4.5V, V_{DS} = 10V I_D = 250mA
Gate-Source Charge	Q_{gs}	—	0.2	—	nC	
Gate-Drain Charge	Q_{gd}	—	0.1	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	1.5	—	ns	V_{DD} = 30V, V_{GS} = 10V R_g = 25Ω, I_D = 200mA
Turn-On Rise Time	t_R	—	9.7	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	22.6	—	ns	
Turn-Off Fall Time	t_F	—	19.5	—	ns	

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

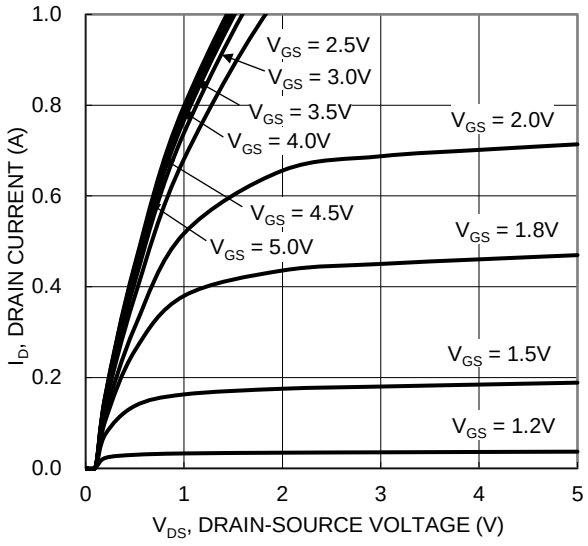


Figure 1. Typical Output Characteristic

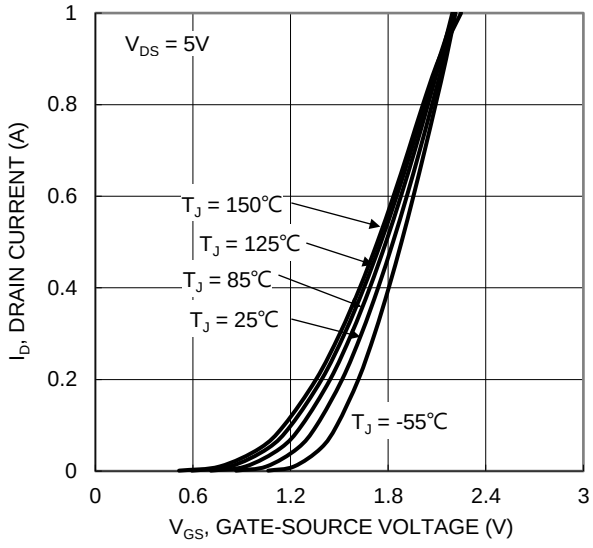


Figure 2. Typical Transfer Characteristic

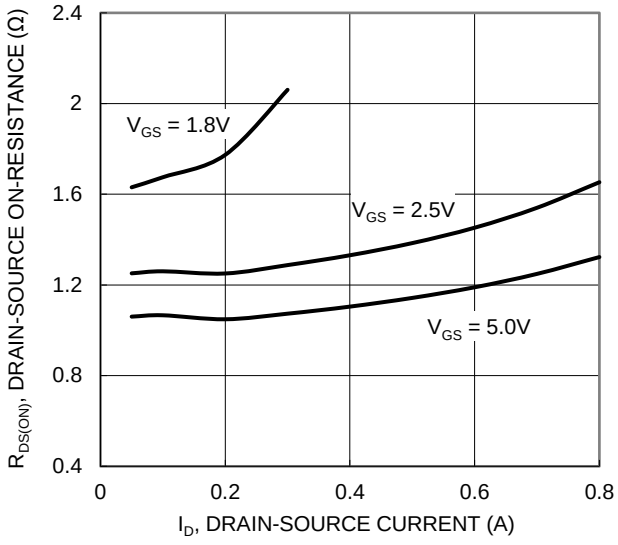


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

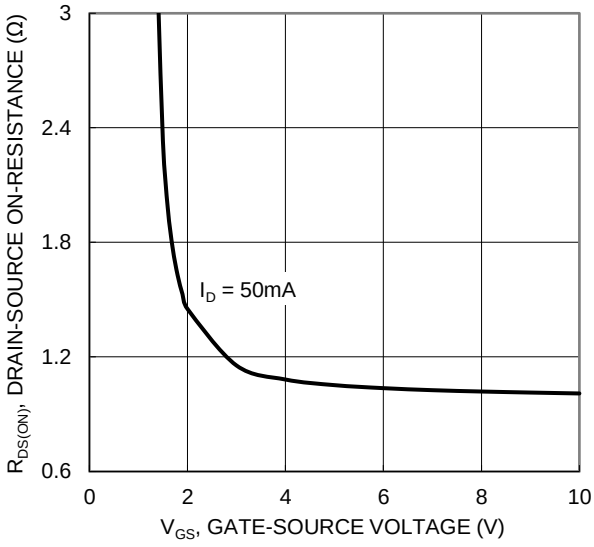


Figure 4. Typical Transfer Characteristic

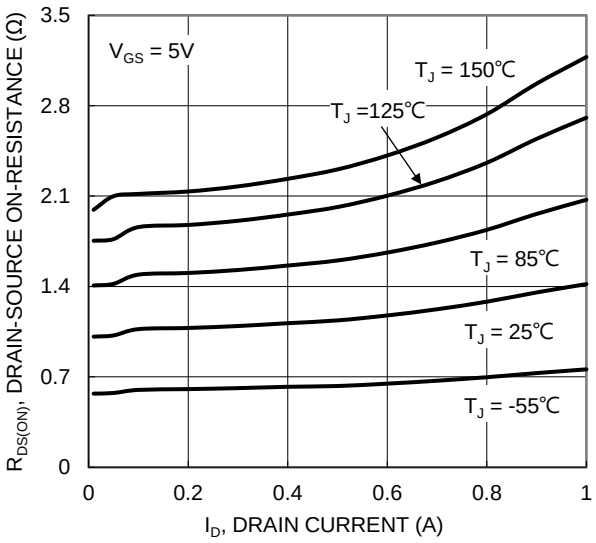


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

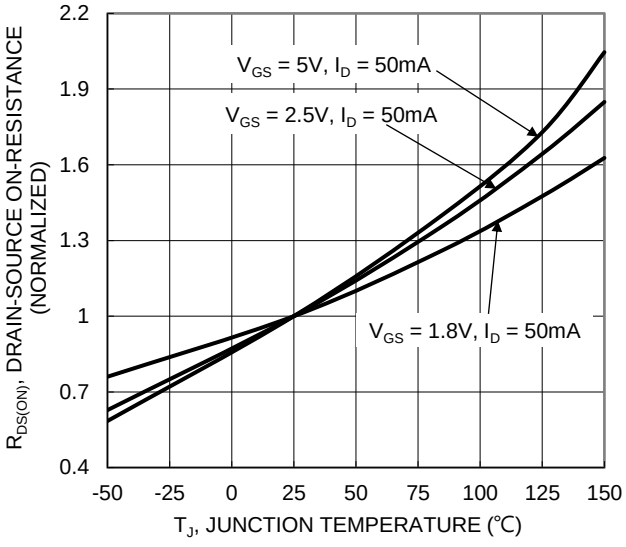


Figure 6. On-Resistance Variation with Junction Temperature

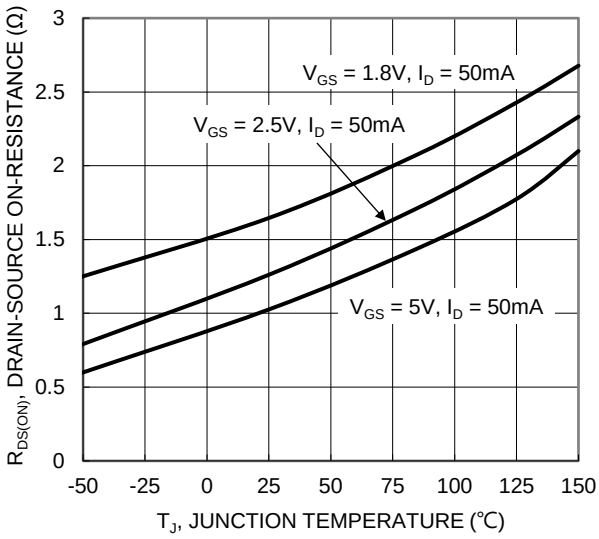


Figure 7. On-Resistance Variation with Junction Temperature

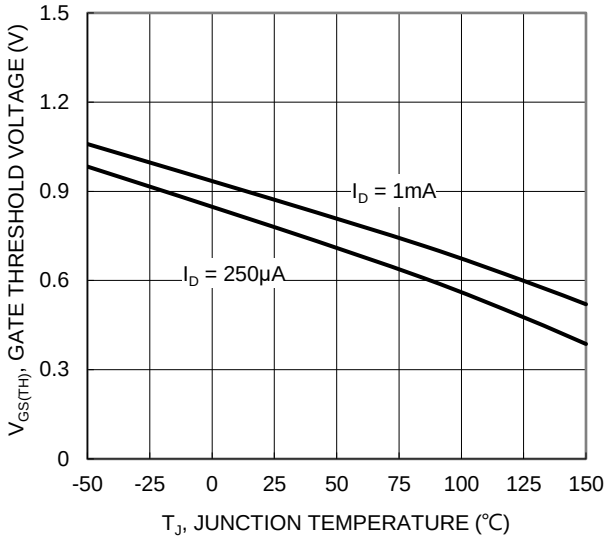


Figure 8. Gate Threshold Variation vs. Junction Temperature

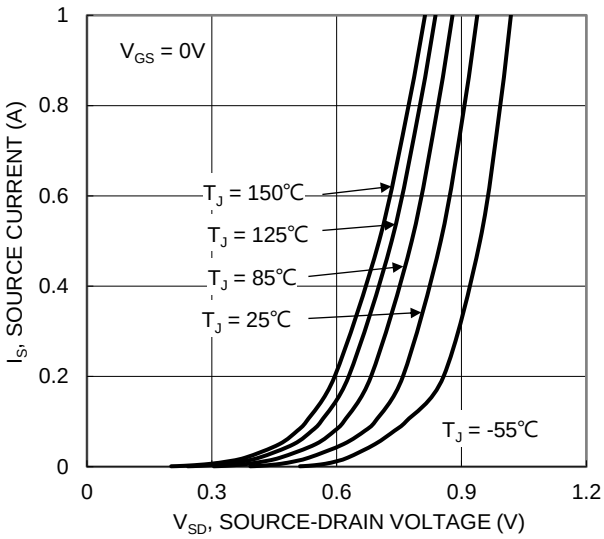


Figure 9. Diode Forward Voltage vs. Current

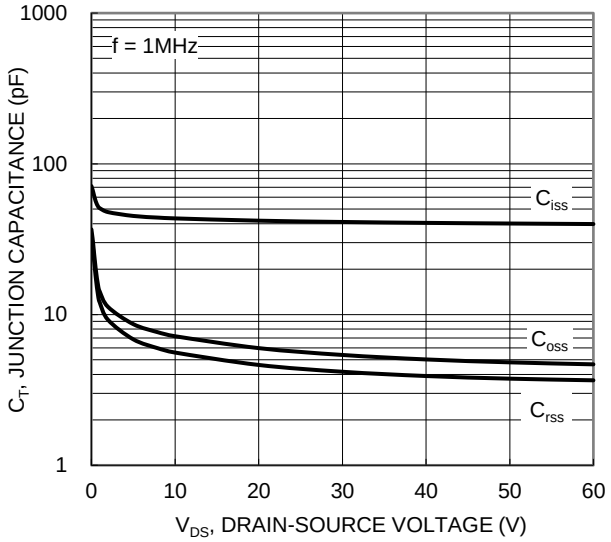


Figure 10. Typical Junction Capacitance

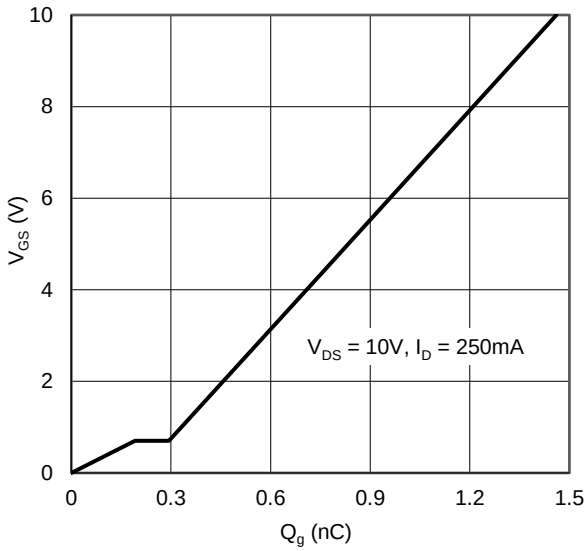


Figure 11. Gate Charge

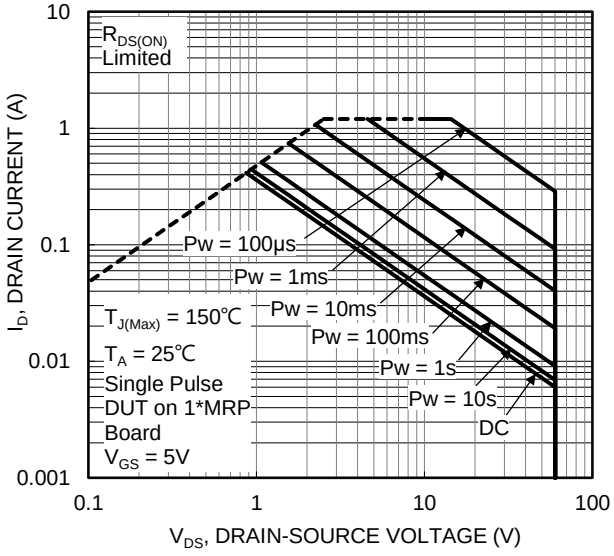


Figure 12. SOA, Safe Operation Area

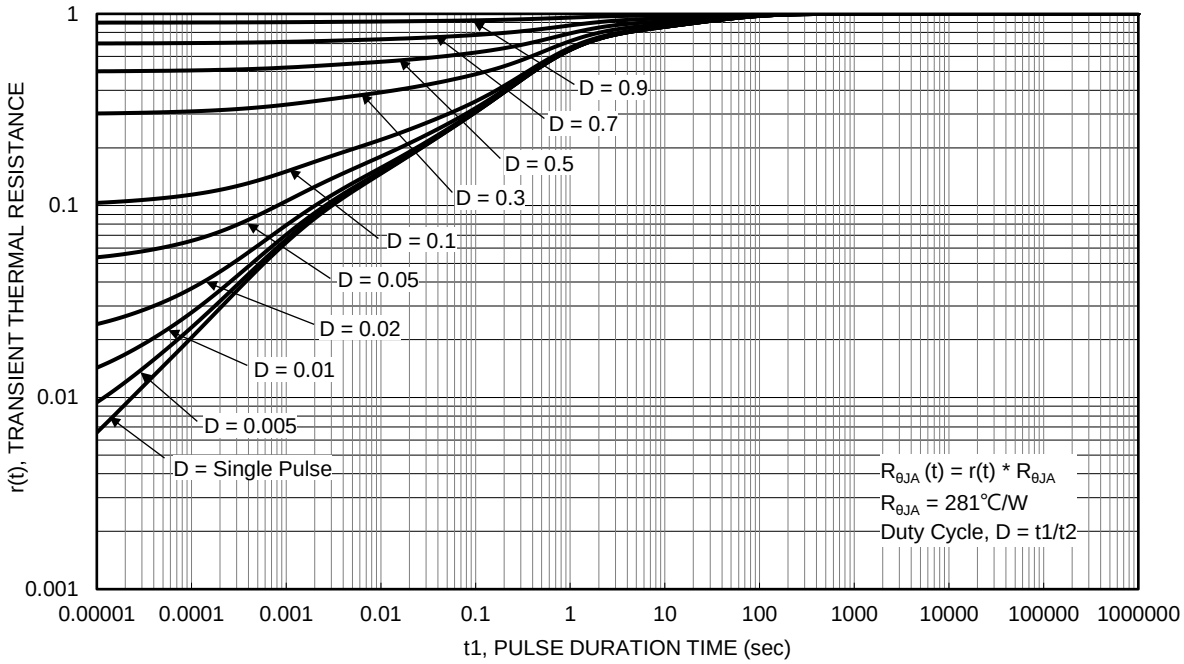
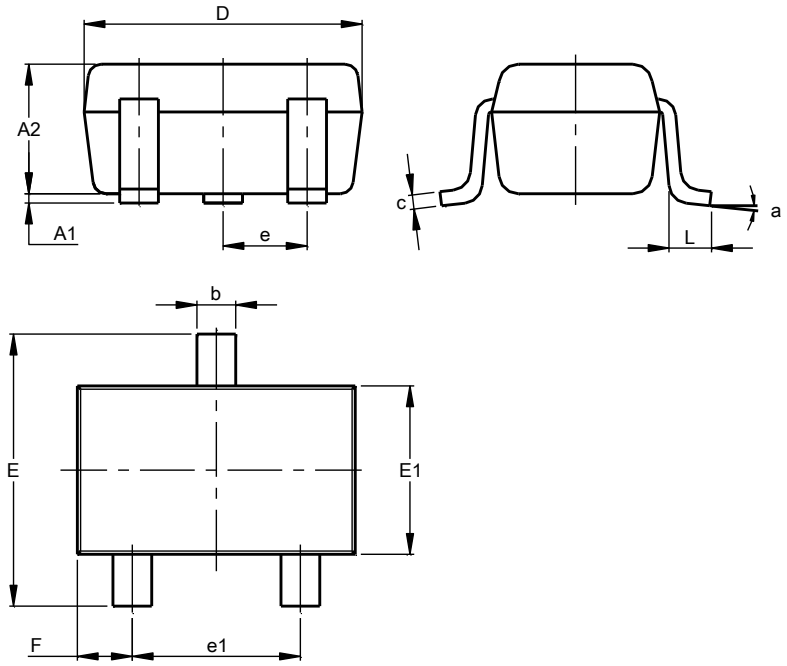


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

SOT323

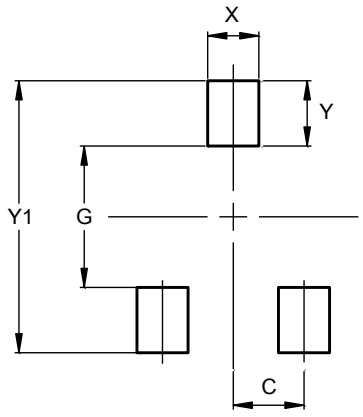


SOT323			
Dim	**Min**	**Max**	**Typ**
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.25	0.40	0.30
c	0.10	0.18	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
e1	1.20	1.40	1.30
F	0.375	0.475	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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

SOT323



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.470
Y	0.600
Y1	2.500

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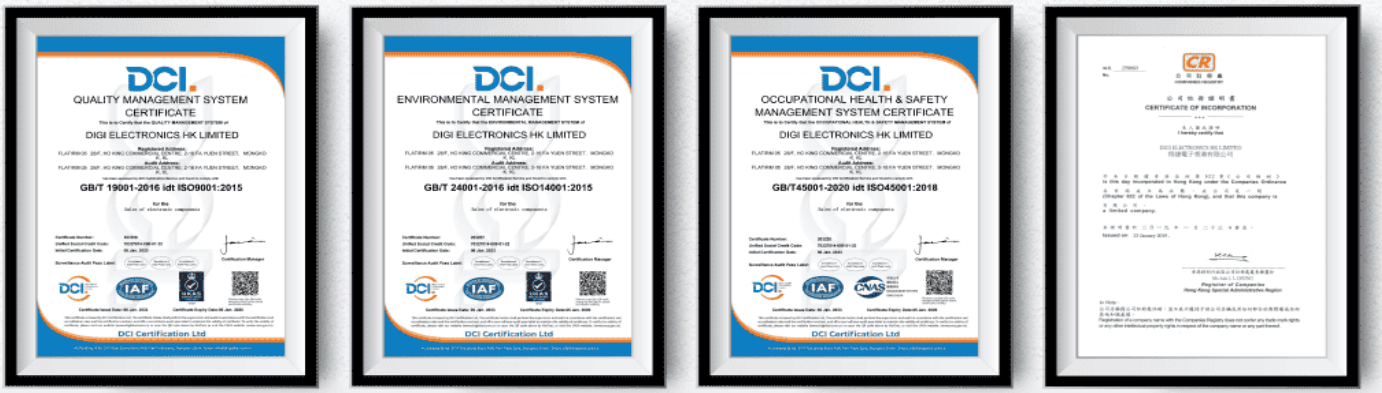

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