

Product Summary

Device	BV _{DSS}	R _{DS(ON)} Max	I _D Max T _C = +25°C
Q1& Q2	30V	11.1mΩ @ V _{GS} = 10V	30A
		15.0mΩ @ V _{GS} = 4.5V	25A

Description

This new generation 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.

Applications

- General Purpose Interfacing Switch
- Power Management Functions

Features and Benefits

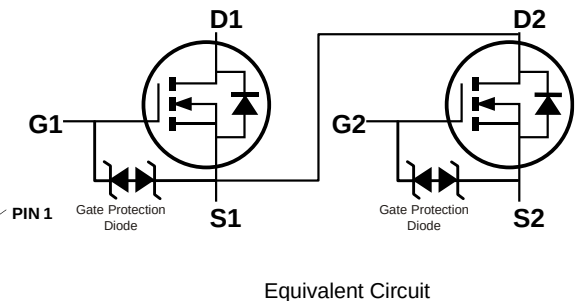
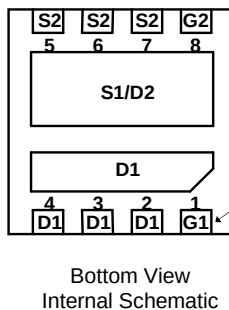
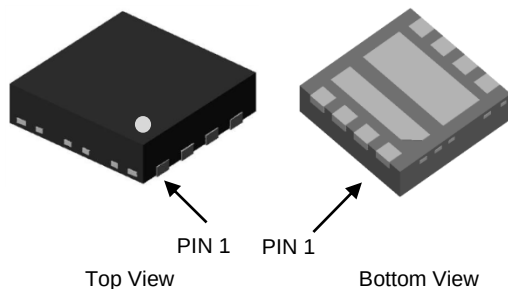
- Ultra Low Gate Threshold Voltage
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- ESD Protected Gate
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](https://www.diodes.com/quality/product-definitions/) or your local Diodes representative.

Mechanical Data

- Case: V-DFN3030-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (e4)
- Weight: 0.02 grams (Approximate)



V-DFN3030-8 (Type KS)



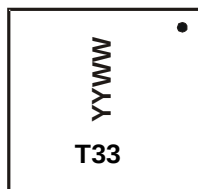
Ordering Information (Note 4)

Part Number	Case	Tape Width	Tape Pitch	Packaging
DMT3009UDT-7	V-DFN3030-8 (Type KS)	12mm	8mm	1,500/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/>.

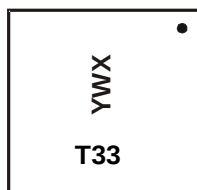
Marking Information

Site 1



T33= Product Type Marking Code
 YYWW = Date Code Marking
 YY or YY = Last Two Digits of Year (ex: 20 = 2020)
 WW = Week Code (01 to 53)

Site 2



T33 = Product Type Marking Code
 YWX = Date Code Marking
 Y = Year (ex: H = 2020)
 W = Week (ex: a = Week 27; z Represents Week 52 and 53)
 X = Internal Code (ex: U = Monday)

Date Code Key

Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	G	H	I	J	K	L	M	N	O	P	R	S

Week	1-26	27-52	53
Code	A-Z	a-z	z

Internal Code	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Code	T	U	V	W	X	Y	Z

Maximum Ratings (@T_J = +25°C, unless otherwise specified.)

Characteristic			Symbol	Q1&Q2	Unit
Drain-Source Voltage			V _{DSS}	30	V
Gate-Source Voltage			V _{GSS}	±12	V
Continuous Drain Current (Note 6) V _{GS} = 10V	Steady State	T _A = +25°C T _A = +70°C	I _D	10.6 8.5	A
Continuous Drain Current (Note 7) V _{GS} = 10V	Steady State	T _C = +25°C T _C = +70°C	I _D	30 25	A
Maximum Body Diode Forward Current (Note 6)			I _S	2.1	A
Pulsed Drain Current (100μs Pulse, Duty Cycle = 1%)			I _{DM}	80	A
Pulsed Body Diode Forward Current (100μs Pulse, Duty Cycle = 1%)			I _{SM}	80	A
Avalanche Current (Note 8) L = 0.1mH			I _{AS}	19	A
Avalanche Energy (Note 8) L = 0.1mH			E _{AS}	18	mJ

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

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)	T _A = +25°C	P _D	1.1	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	R _{θJA}	112	°C/W
Total Power Dissipation (Note 6)	T _A = +25°C	P _D	1.9	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	R _{θJA}	66	°C/W
Total Power Dissipation (Note 7)	T _C = +25°C	P _D	16	W
Thermal Resistance, Junction to Case (Note 7)		R _{θJC}	8	°C/W
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 9)						
Drain-Source Breakdown Voltage	BV _{DSS}	30	—	—	V	V _{GS} = 0V, I _D = 250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	1	μA	V _D = 24V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±10	μA	V _{GS} = ±10V, V _D = 0V
ON CHARACTERISTICS (Note 9)						
Gate Threshold Voltage	V _{GS(TH)}	0.5	—	1.8	V	V _D = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	8.6	11.1	mΩ	V _{GS} = 10V, I _D = 11A
		—	11.5	15		V _{GS} = 4.5V, I _D = 7A
Diode Forward Voltage	V _{SD}	—	0.8	1.2	V	V _{GS} = 0V, I _S = 8.8A
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C _{iss}	—	894	—	pF	V _D = 15V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	—	381	—		
Reverse Transfer Capacitance	C _{rss}	—	76	—		
Gate Resistance	R _g	—	1.1	—	Ω	V _D = 0V, V _{GS} = 0V, f = 1.0MHz
Total Gate Charge (V _{GS} = 10V)	Q _g	—	14.6	—	nC	V _D = 15V, I _D = 10A
Total Gate Charge (V _{GS} = 4.5V)	Q _g	—	7.4	—		
Gate-Source Charge	Q _{gs}	—	1.6	—		
Gate-Drain Charge	Q _{gd}	—	3.4	—		
Turn-On Delay Time	t _{D(ON)}	—	3.4	—	ns	V _{GS} = 10V, V _{DD} = 15V, R _g = 1Ω, I _D = 8.8A
Turn-On Rise Time	t _r	—	5.5	—		
Turn-Off Delay Time	t _{D(OFF)}	—	9.6	—		
Turn-Off Fall Time	t _f	—	1.6	—		
Body Diode Reverse Recovery Time	t _{RR}	—	17	—	ns	I _F = 8.8A, di/dt = 100A/μs
Body Diode Reverse Recovery Charge	Q _{RR}	—	6.7	—	nC	

- Notes:
5. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
 6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
 7. Thermal resistance from junction to soldering point (on the exposed drain pad).
 8. UIS in production with L = 0.1mH, starting T_A = +25°C.
 9. Short duration pulse test used to minimize self-heating effect.
 10. Guaranteed by design. Not subject to product testing.

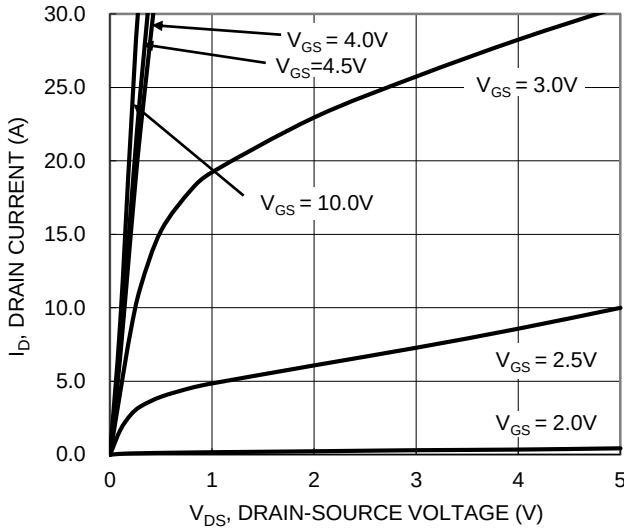


Figure 1. Typical Output Characteristic

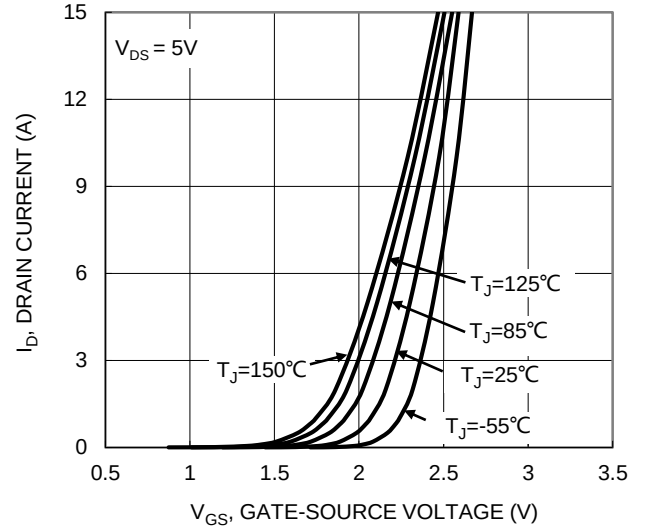


Figure 2. Typical Transfer Characteristic

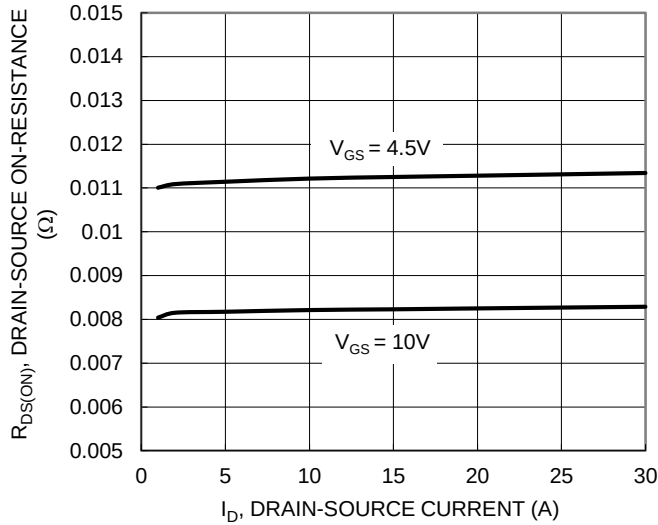


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

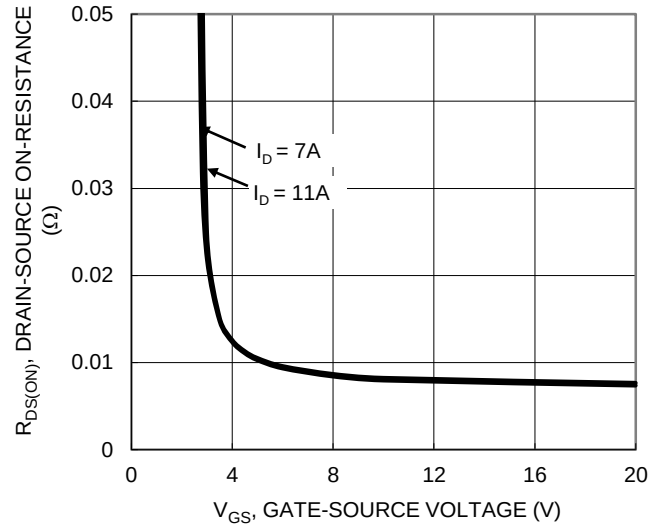


Figure 4. Typical Transfer Characteristic

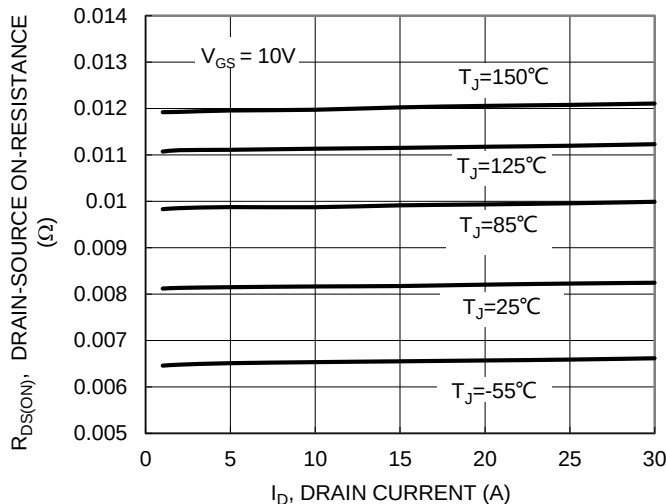


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

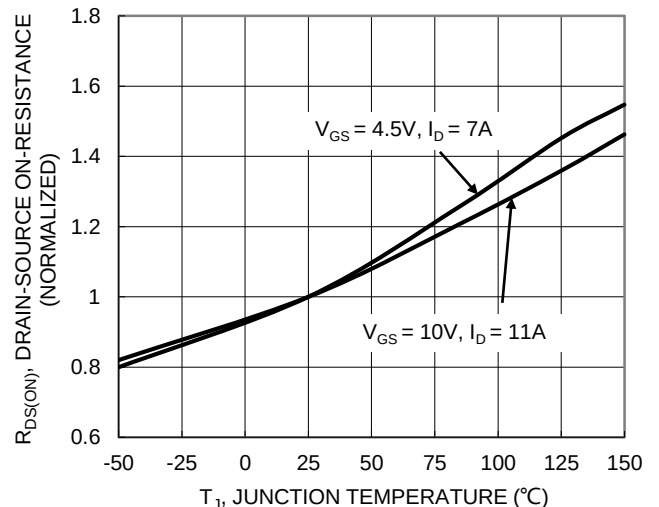
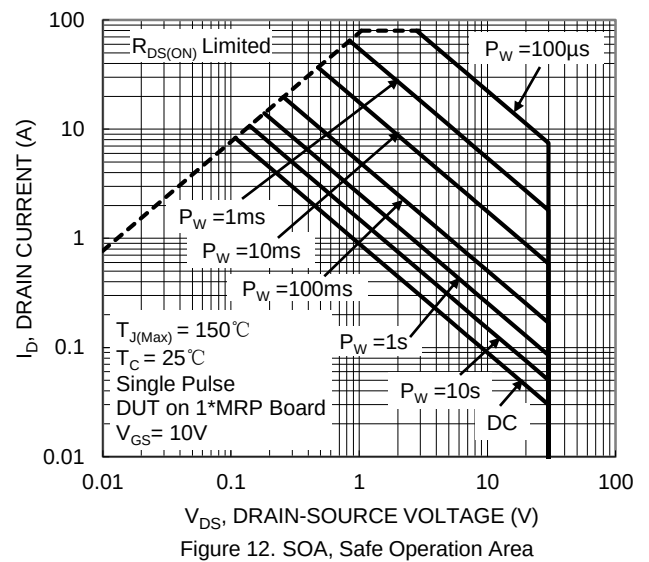
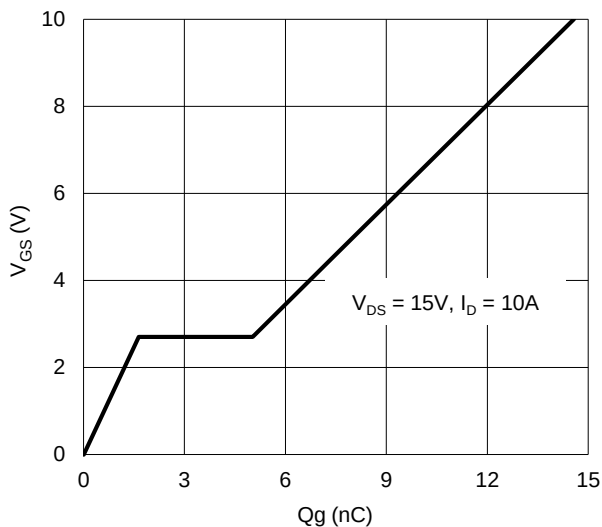
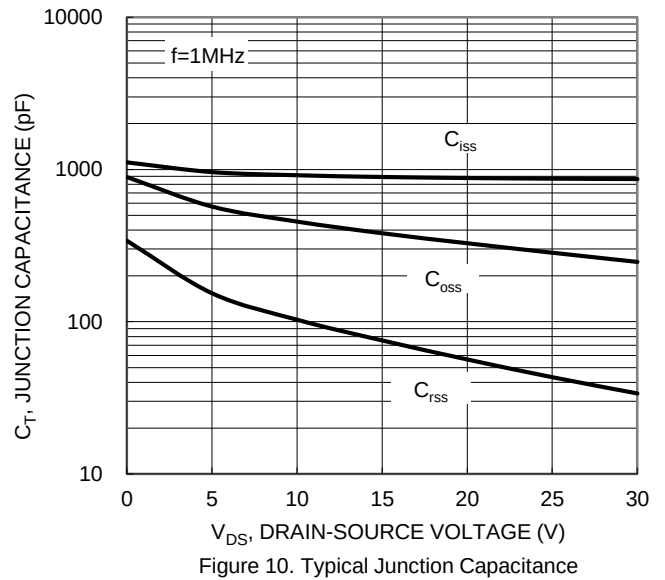
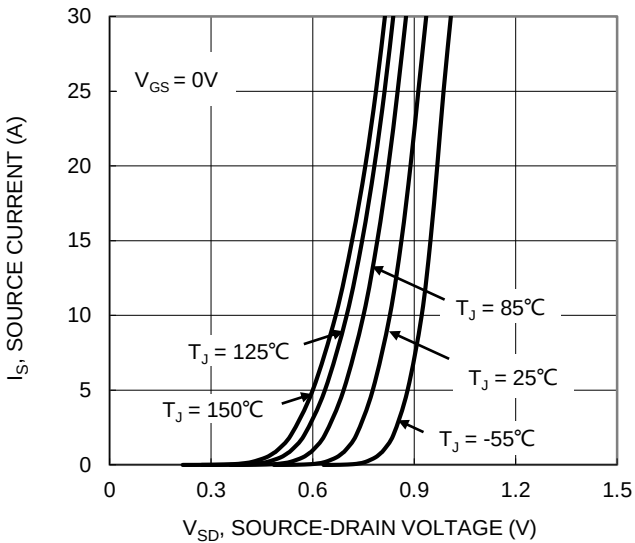
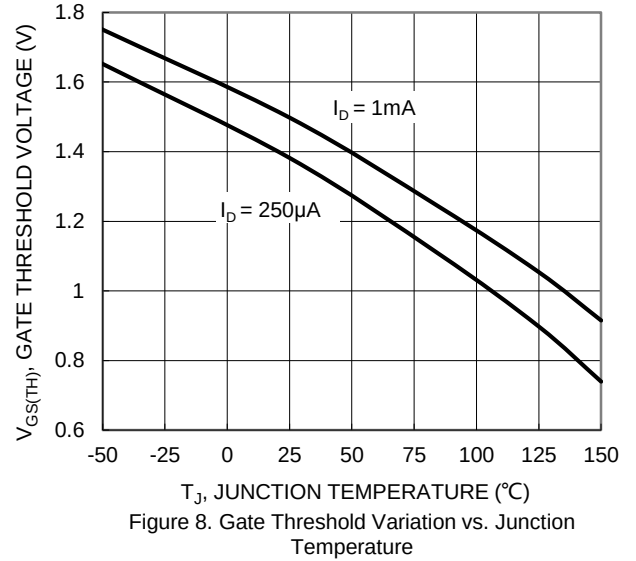
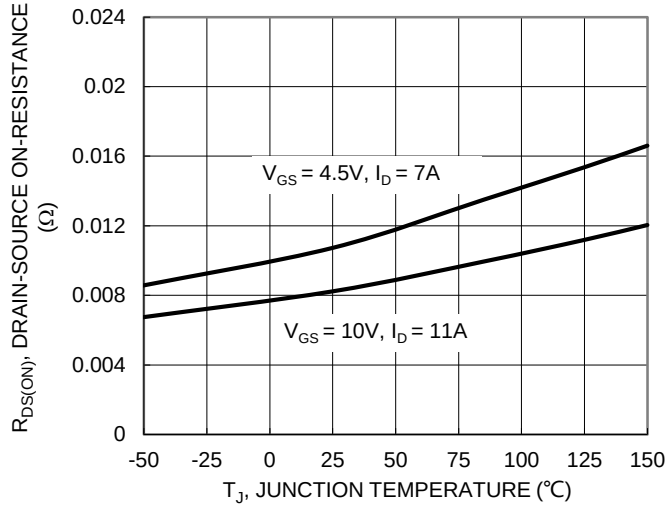


Figure 6. On-Resistance Variation with Junction Temperature



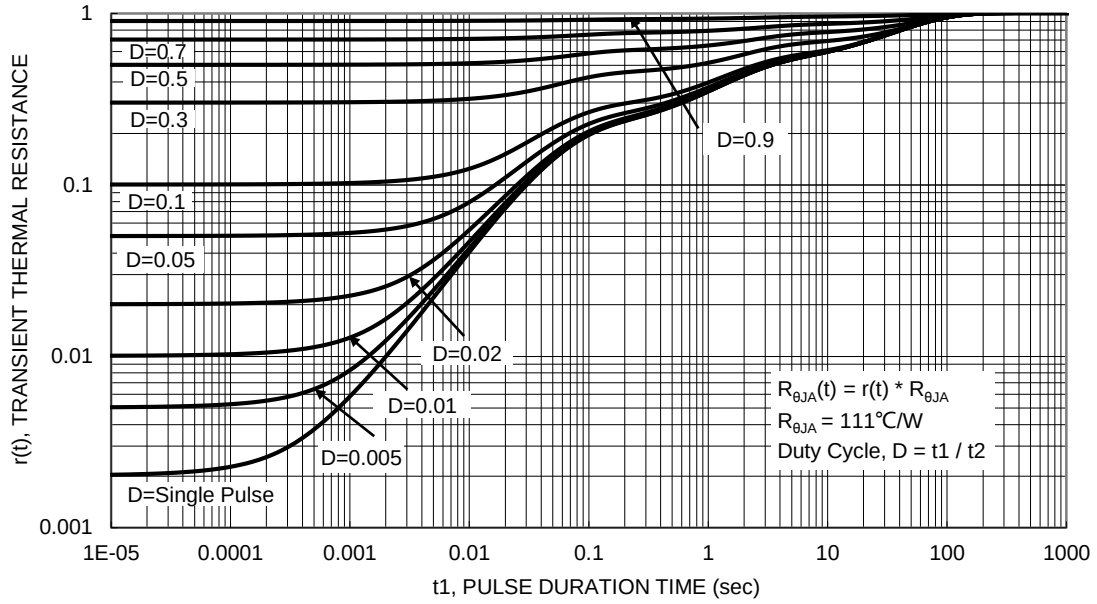
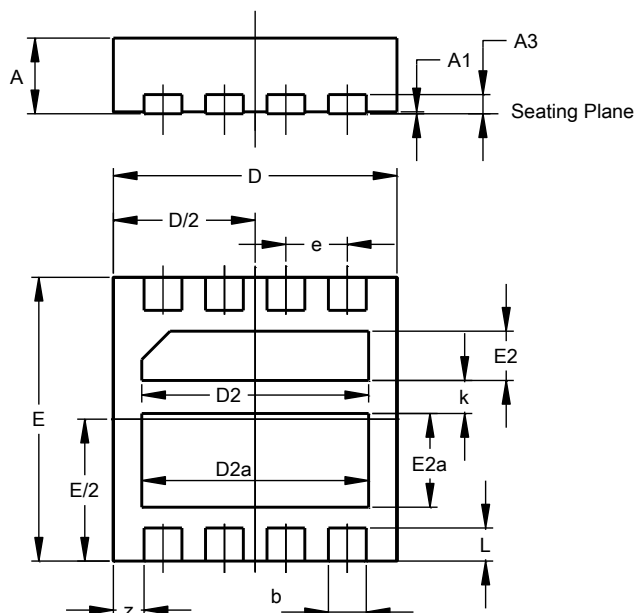


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

V-DFN3030-8 (Type KS)

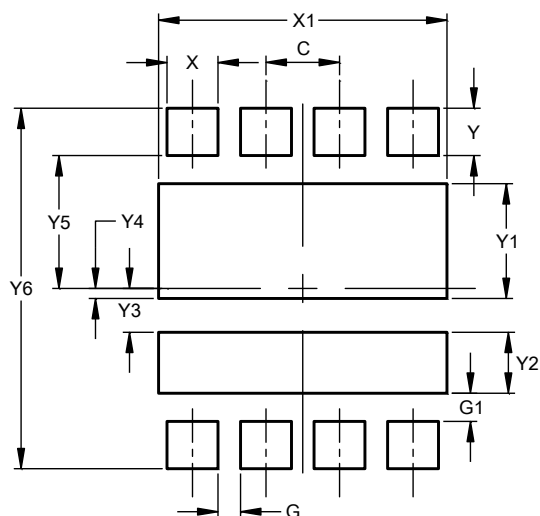


V-DFN3030-8 (Type KS)			
Dim	Min	Max	Typ
A	0.77	0.85	0.80
A1	0.00	0.05	0.02
A3	0.20BSC		
b	0.35	0.45	0.40
D	2.95	3.050	3.00
D2	2.30	2.50	2.40
D2a	2.30	2.50	2.40
E	2.95	3.050	3.00
E2	0.42	0.62	0.52
E2a	0.89	1.09	0.99
e	0.65BSC		
k	-	-	0.35
L	0.30	0.40	0.35
z	0.325BSC		
All Dimensions in mm			

Suggested Pad Layout

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

V-DFN3030-8 (Type KS)



Dimensions	Value (in mm)
C	0.650
G	0.200
G1	0.250
X	0.450
X1	2.550
Y	0.420
Y1	1.019
Y2	0.541
Y3	0.389
Y4	0.089
Y5	1.180
Y6	3.200

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