Product Summary

$V_{(BR)DSS}$	$R_{DS(on)}$ max	I_D max T_A = +25°C
30V	28mΩ @ V_{GS} = 10V	5.8A
	42mΩ @ V_{GS} = 4.5V	4.8A
	82mΩ @ V_{GS} = 3V	2.0A

Description

This MOSFET has been 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.

Applications

- Battery Charging
- Power Management Functions
- DC-DC Converters
- Portable Power Adaptors

Features and Benefits

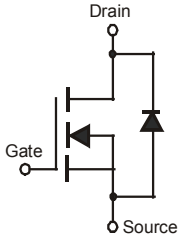
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The DMN3404LQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**
  https://www.diodes.com/quality/product-definitions/

Mechanical Data

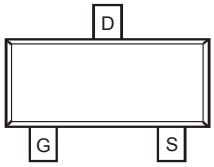
- Case: SOT23 (Standard)
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 e3
- Terminals Connections: See Diagram Below
- Weight: 0.008 grams (approximate)



Top View



Internal Schematic



Top View

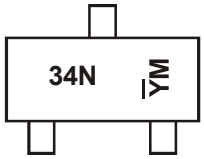
Ordering Information (Note 4)

Part Number	Compliance	Case	Packaging
DMN3404L-7	Standard	SOT23 (Standard)	3000/Tape & Reel
DMN3404LQ-7	Automotive	SOT23 (Standard)	3000/Tape & Reel

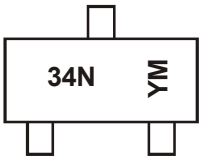
Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
5. For packaging details, go to Diodes website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

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Marking Information



Chengdu A/T Site



Shanghai A/T Site

34N = Product Type Marking Code
YM = Date Code Marking for SAT (Shanghai Assembly/Test site)
$\overline{Y}\overline{M}$ = Date Code Marking for CAT (Chengdu Assembly/Test site)
Y or $\overline{Y}$ = Year (ex: I = 2021)
M = Month (ex: 9 = September)

Date Code Key

Year	2009	……	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	W	……	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	Units
Drain-Source Voltage (Notes 6, 7)			V_{DSS}	30	V
Gate-Source Voltage			V_{GSS}	±20	V
Continuous Drain Current (Note 6) V_{GS} = 10V	Steady State	T_A = -40°C T_A = +25°C T_A = +85°C	I_D	4.6 4.2 3.0	A
Continuous Drain Current (Note 7) V_{GS} = 10V	Steady State	T_A = -40°C T_A = +25°C T_A = +85°C	I_D	6.2 5.8 4.0	A
Continuous Drain Current (Note 7) V_{GS} = 4.5V	Steady State	T_A = -40°C T_A = +25°C T_A = +85°C	I_D	5.2 4.8 3.2	A
Continuous Drain Current (Note 7) V_{GS} = 3V	Steady State	T_A = -40°C T_A = +25°C T_A = +85°C	I_D	2.2 2.0 1.0	A
Pulsed Drain Current			I_{DM}	30	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P_D	0.72	W
Thermal Resistance, Junction to Ambient @T_A = +25°C	$R_{\theta JA}$	173	°C/W
Power Dissipation (Note 7)	P_D	1.4	W
Thermal Resistance, Junction to Ambient @T_A = +25°C	$R_{\theta JA}$	90	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 6. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
7. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate.

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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}	30	—	—	V	V_{GS} = 0V, I_D = 250μA
Zero Gate Voltage Drain Current T_J = +25°C	I_{DSS}	—	—	1.0	μA	V_{DS} = 30V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	$V_{GS(th)}$	1.0	1.5	2.0	V	V_{DS} = V_{GS}, I_D = 250μA
Static Drain-Source On-Resistance T_J = -40°C (Note 9)	$R_{DS(on)}$	—	23	27	—	V_{GS} = 4.5V, I_D = 4.8A
		—	57	74	—	V_{GS}=3V, I_D =2A
Static Drain-Source On-Resistance T_J = +25°C	$R_{DS(on)}$	—	24	28	mΩ	V_{GS} = 10V, I_D = 5.8A
		—	33	42		V_{GS} = 4.5V, I_D = 4.8A
		—	63	82		V_{GS}=3V, I_D =2A
Static Drain-Source On-Resistance T_J = +85°C (Note 9)	$R_{DS(on)}$	—	71	95	mΩ	V_{GS}=3V, I_D =2A
Forward Transfer Admittance	$\|Y_{fs}\|$	—	10	—	S	V_{DS} = 5V, I_D = 5.8A
Diode Forward Voltage	V_{SD}	—	0.75	1.0	V	V_{GS} = 0V, I_S = 1A
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C_{iss}	—	498	—	pF	V_{DS} = 15V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	—	52	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	45	—	pF	
Gate Resistance	R_g	—	1.75	2.8	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge (V_{GS} = 3V)	Q_g	—	3.8	5.3	nC	V_{GS} = 3V, V_{DS} = 15V, I_D = 1A
Total Gate Charge (V_{GS} = 4.5V)	Q_g	—	5.3	7.5	nC	V_{GS} = 10V/4.5V, V_{DS} = 15V, I_D = 5.8A
Total Gate Charge (V_{GS} = 10V)	Q_g	—	11.3	16	nC	
Gate-Source Charge	Q_{gs}	—	1.4	—	nC	
Gate-Drain Charge	Q_{gd}	—	2.1	—	nC	
Turn-On Delay Time	$t_{D(on)}$	—	3.41	10	ns	V_{DD} = 15V, V_{GS} = 10V, R_L = 2.6Ω, R_G = 3Ω
Turn-On Rise Time	t_r	—	6.18	13	ns	
Turn-Off Delay Time	$t_{D(off)}$	—	13.92	28	ns	
Turn-Off Fall Time	t_f	—	2.84	10	ns	

Notes: 8. Short duration pulse test used to minimize self-heating effect.
9. Guaranteed by design and 25°C data. Not subject to production testing
10. Guaranteed by design. Not subject to production testing.

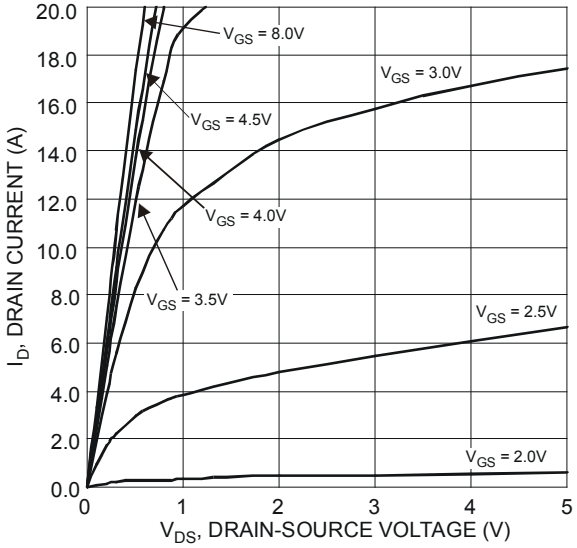


Figure 1 Typical Output Characteristics

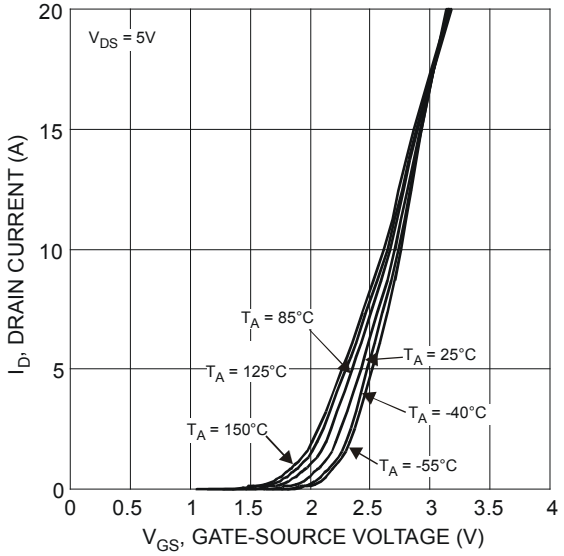


Figure 2 Typical Transfer Characteristics

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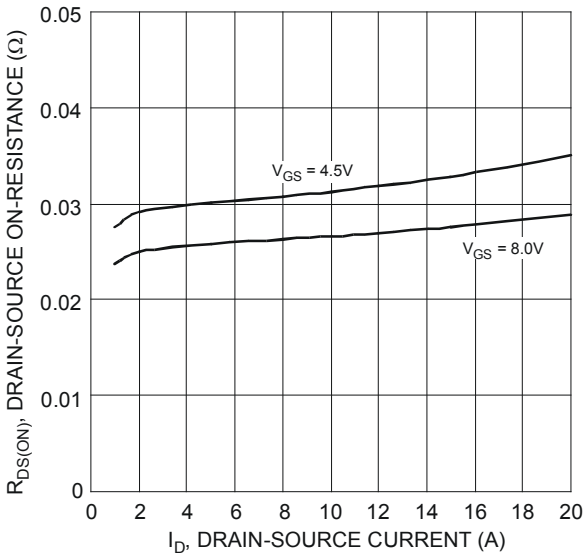


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

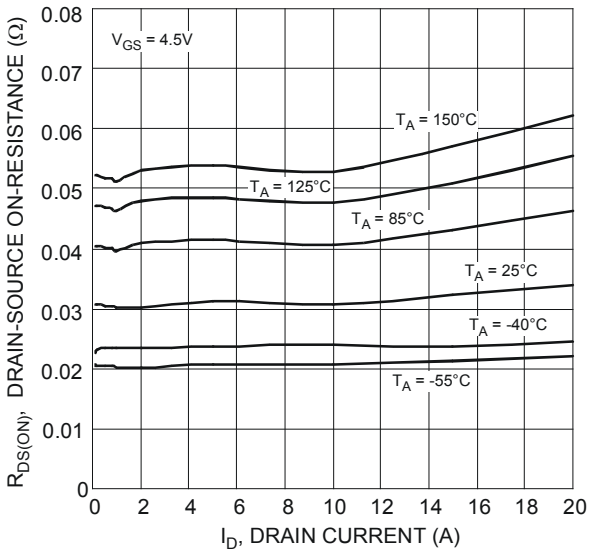


Figure 4 Typical On-Resistance vs. Drain Current and Temperature

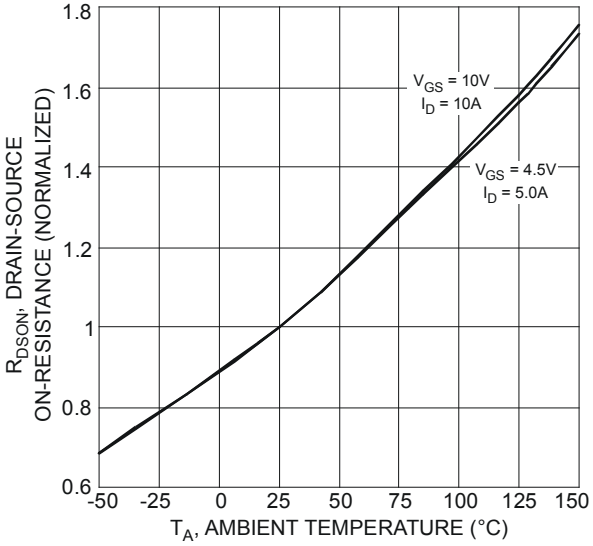


Figure 5 On-Resistance Variation with Temperature

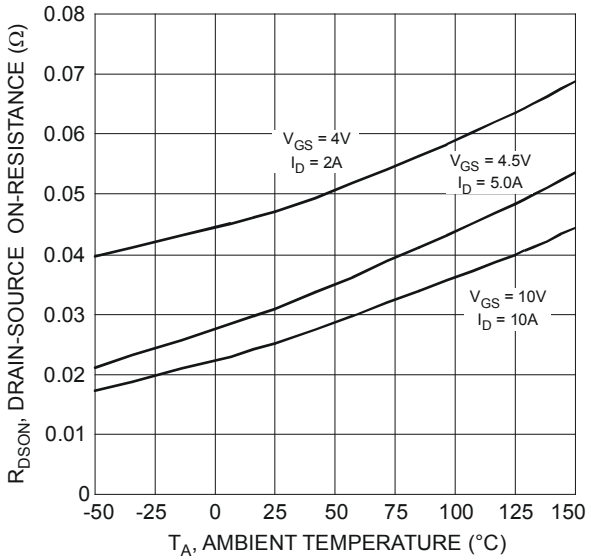


Figure 6 On-Resistance Variation with Temperature

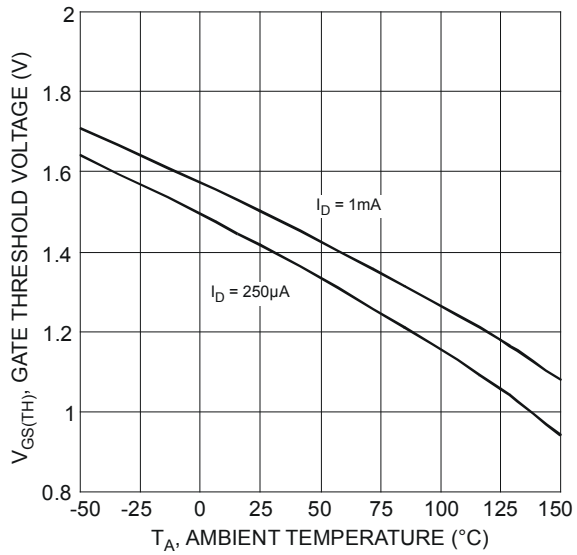


Figure 7 Gate Threshold Variation vs. Ambient Temperature

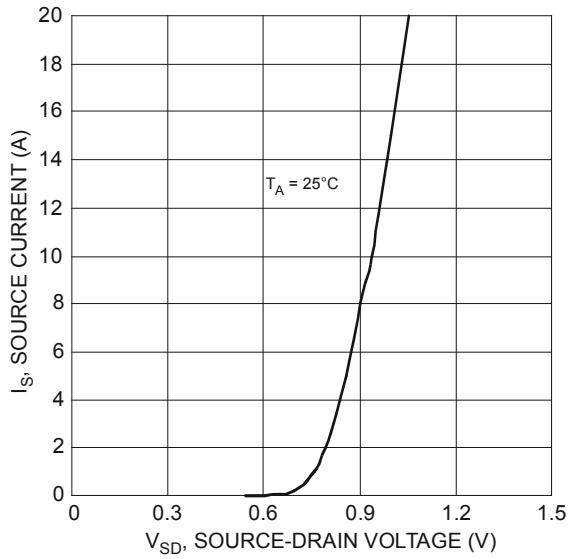


Figure 8 Diode Forward Voltage vs. Current

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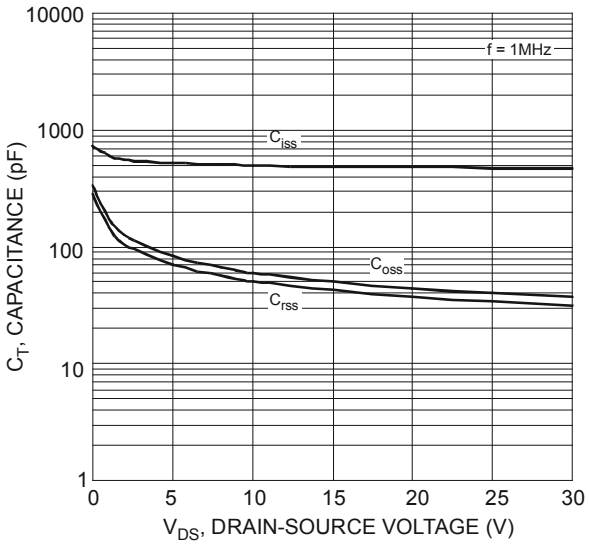


Figure 9 Typical Total Capacitance

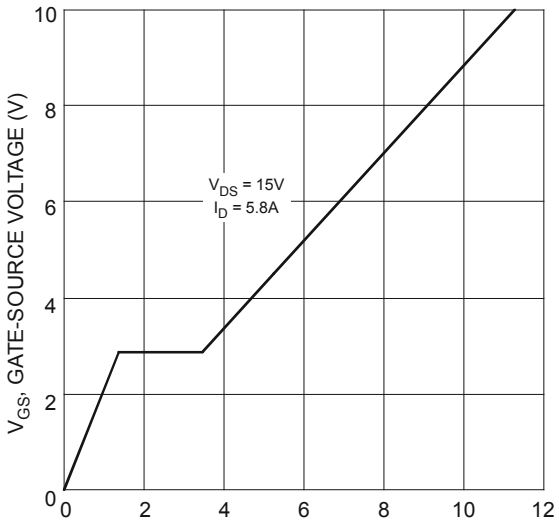


Figure 10 Gate-Charge Characteristics

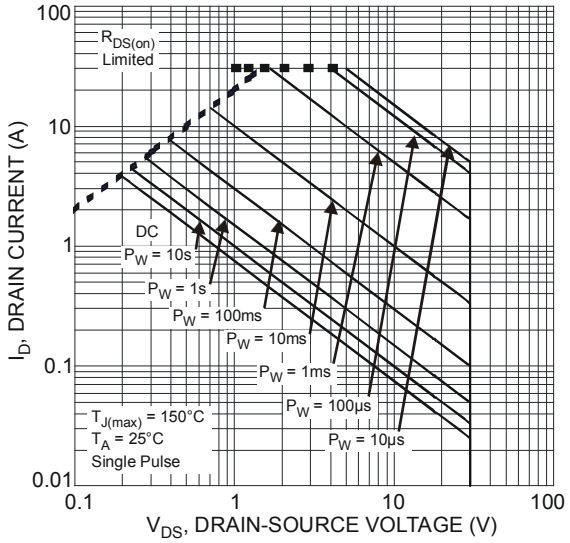


Figure 11 Safe Operation Area

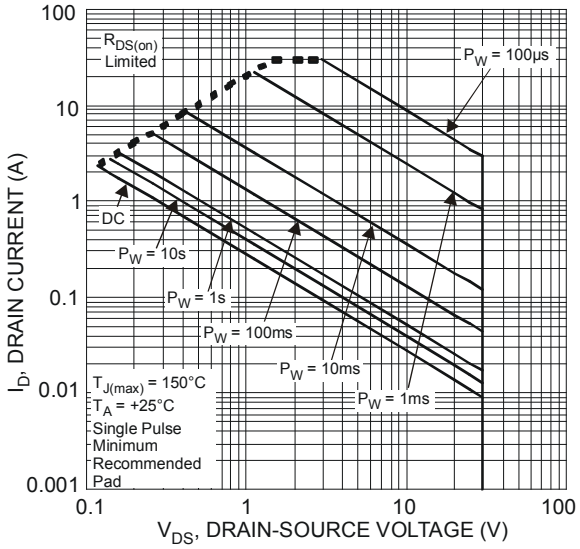


Figure 12 Safe Operation Area

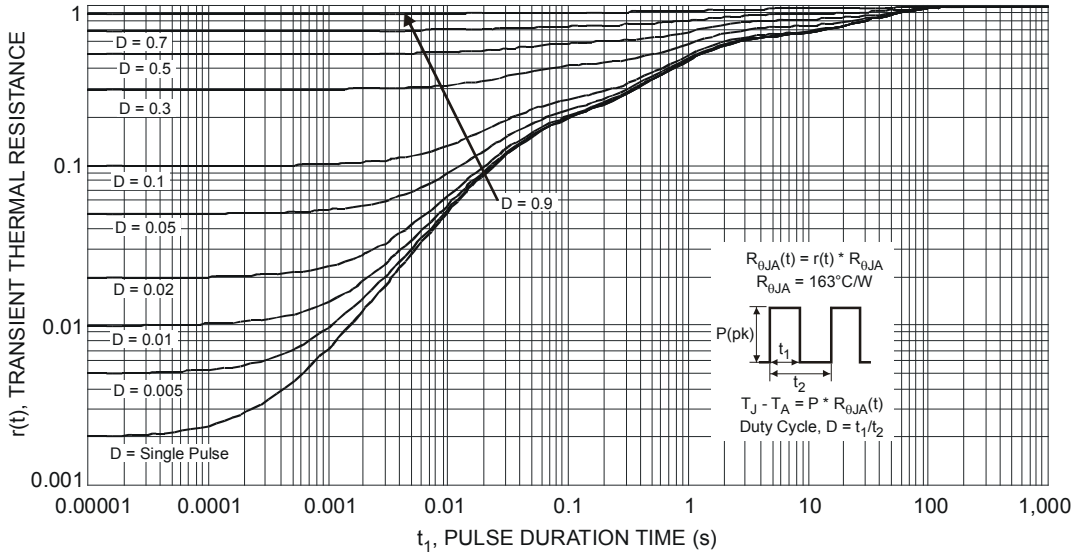
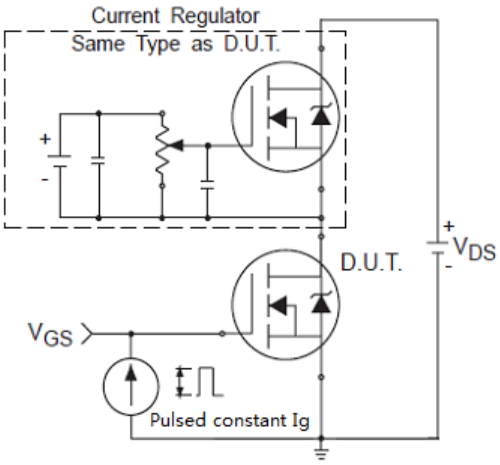
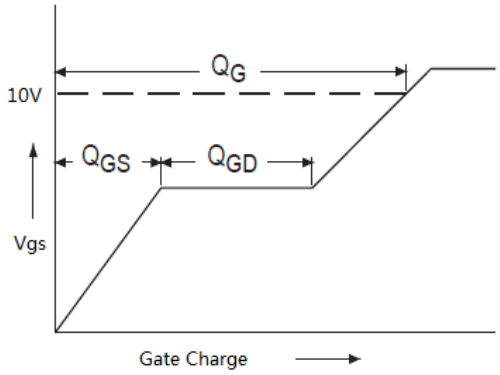


Figure 13 Transient Thermal Response

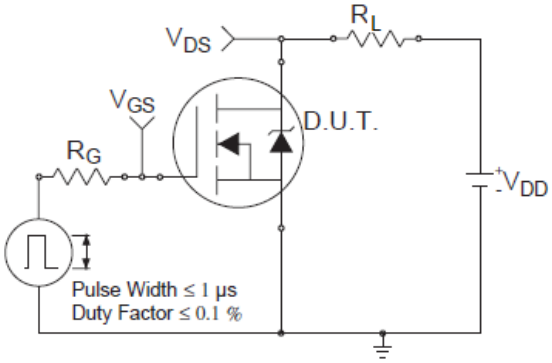
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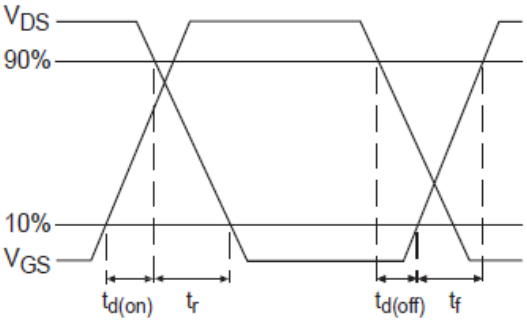
Gate Charge Test Circuit and Waveform





Switching Test Circuit and Waveform



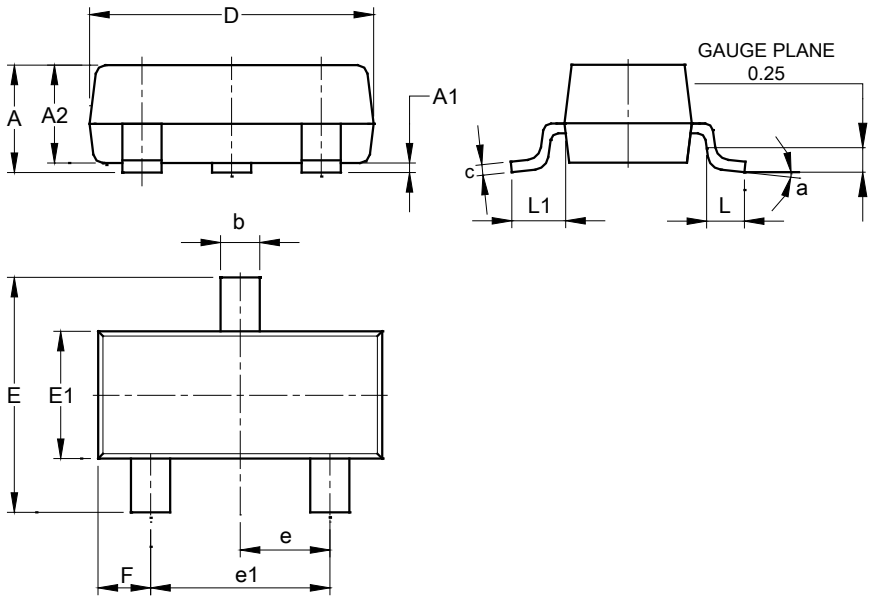


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Package Outline Dimensions

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

SOT23 (Standard)

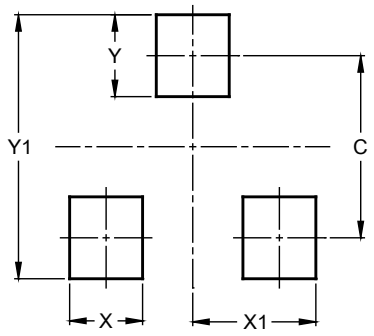


SOT23 (Standard)			
Dim	**Min**	**Max**	**Typ**
A	0.90	1.15	1.025
A1	0.00	0.10	0.05
A2	0.85	1.10	0.975
b	0.30	0.51	0.40
c	0.080	0.202	0.11
D	2.80	3.00	2.90
E	2.25	2.55	2.40
E1	1.20	1.40	1.30
e	0.89	1.03	0.915
e1	1.78	2.05	1.83
F	0.40	0.60	0.535
L1	0.45	0.61	0.55
L	0.25	0.55	0.40
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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

SOT23 (Standard)



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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Teklif isteyin

www.entegreci.com | **destek@entegreci.com** | **0850 305 90 34**

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