60V N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

BV_{DSS}	$R_{DS(ON)}$	I_D T_A = +25°C
60V	68mΩ @ V_{GS} = 10V	8.5A
	100mΩ @ V_{GS} = 4.5V	7.0A

Features and Benefits

- 100% Unclamped Inductive Switch (UIS) Test in Production
- Low On-Resistance
- Fast Switching Speed
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The DMN6068LK3Q 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/

Description and Applications

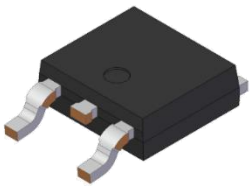
This MOSFET is designed to meet the stringent requirements of automotive applications. It is qualified to AEC-Q101, supported by a PPAP, and is ideal for use in:

- Motor control
- Transformer driving switches
- DC-DC converters
- Power-management functions
- Uninterrupted power supplies

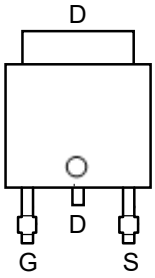
Mechanical Data

- Package: TO252
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram
- Terminals: Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.33 grams (Approximate)

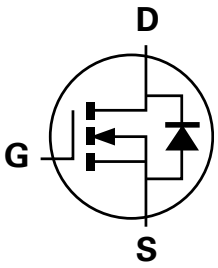
TO252 (DPAK)



Top View



Pin Out — Top View



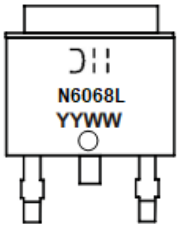
Equivalent Circuit

Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
DMN6068LK3Q-13	TO252 (DPAK)	2,500	Tape & Reel

Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
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



= Manufacturer's Marking
N6068L = Product Type Marking Code
YYWW = Date Code Marking
YY = Year (ex: 25 = 2025)
WW = Week (01 to 52)

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	60	V
Gate-Source Voltage		(Note 5)	V_{GS}	±20	V
Single Pulsed Avalanche Energy		(Note 11)	E_{AS}	37.5	mJ
Single Pulsed Avalanche Current		(Note 11)	I_{AS}	5.0	A
Continuous Drain Current	V_{GS} = 10V	(Note 7)	I_D	8.5	A
		T_A = +70°C (Note 7)		6.8	
		(Note 6)		6.0	
		T_C = +25°C (Note 12)		20	
Pulsed Drain Current	V_{GS} = 10V	(Note 8)	I_{DM}	22.2	A
Continuous Source Current (Body Diode)		(Note 7)	I_S	10.2	A
Pulsed Source Current (Body Diode)		(Note 8)	I_{SM}	22.2	A

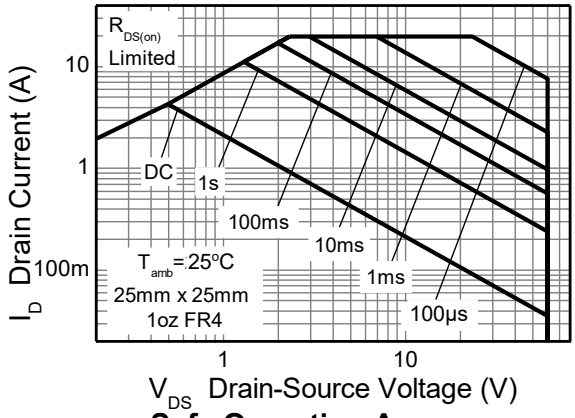
Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Power Dissipation Linear Derating Factor	(Note 6)	P_D Linear Derating Factor	4.12 33	W mW/°C
	(Note 7)		8.49 67.9	W mW/°C
	(Note 9)		2.12 16.9	W mW/°C
Power Dissipation	T_C = +25°C (Note 12)	P_D	41	W
Thermal Resistance, Junction to Ambient	(Note 6)	$R_{\theta JA}$	30.3	°C/W
	(Note 7)		14.7	
	(Note 9)		59.0	
Thermal Resistance, Junction to Lead	(Note 10)	$R_{\theta JL}$	3.09	
Thermal Resistance, Junction to Case	(Note 12)	$R_{\theta JC}$	3.03	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

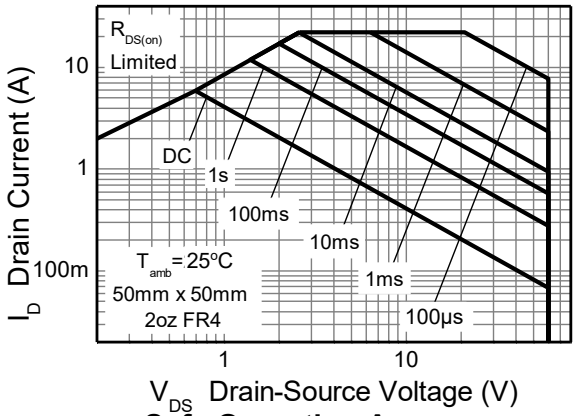
Notes:
5. AEC-Q101 V_{GS} maximum is ±16V.
6. For a device surface mounted on 50mm × 50mm × 1.6mm FR4 PCB with high coverage of single-sided 2oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
7. Same as note 6 except the device is measured at t ≤ 10 sec.
8. Same as note 6 except the device is pulsed with D = 0.02 and pulse width 300µs. The pulse current is limited by the maximum junction temperature.
9. For a device surface mounted on 25mm × 25mm × 1.6mm FR4 PCB with high coverage of single-sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
10. Thermal resistance from junction to solder-point (at the end of the drain lead).
11. UIS in production with L = 3.0mH, I_{AS} = 5.0A, R_G = 25Ω, V_{DD} = 50V, starting T_J = +25°C.
12. Thermal resistance from junction to soldering point (on the exposed drain pad).

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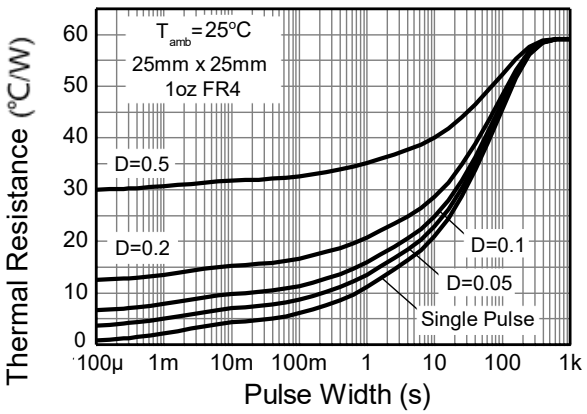
Thermal Characteristics



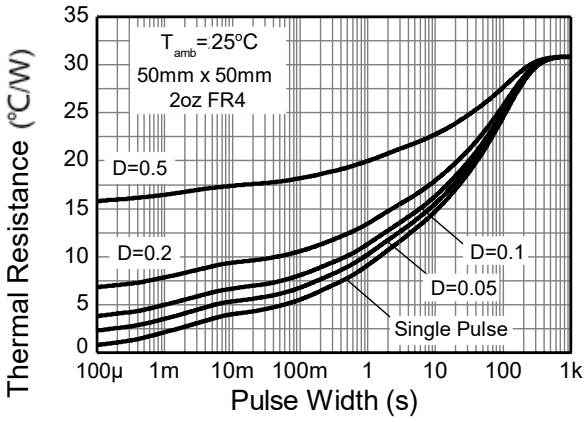
Safe Operating Area



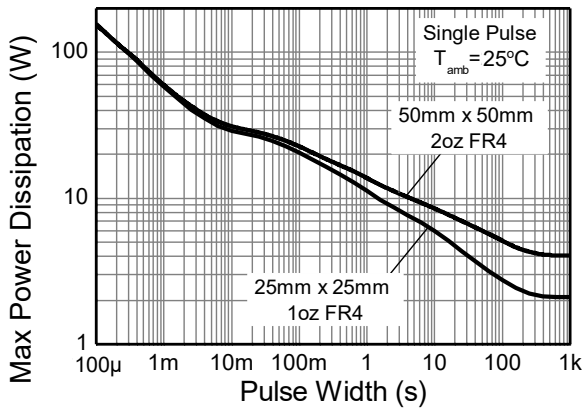
Safe Operating Area



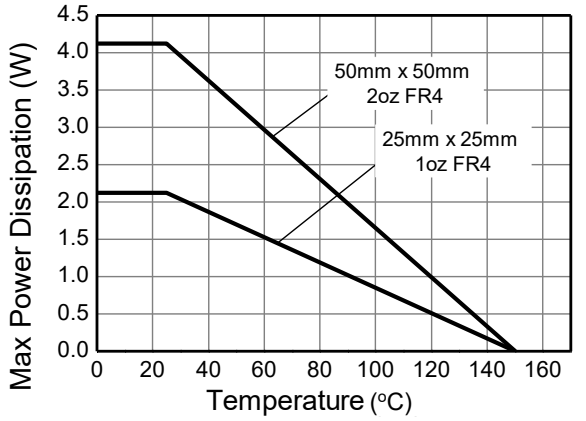
Transient Thermal Impedance



Transient Thermal Impedance



Pulse Power Dissipation



Derating Curve

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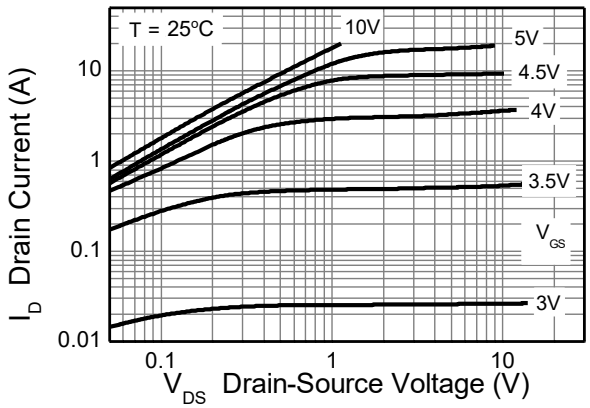
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	60	—	—	V	I_D = 250µA, V_{GS} = 0
Zero Gate Voltage Drain Current	I_{DSS}	—	—	0.5	µA	V_{DS} = 60V, V_{GS} = 0
Gate-Source Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±20V, V_{DS} = 0
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	1.0	—	3.0	V	I_D = 250µA, V_{DS} = V_{GS}
Static Drain-Source On-Resistance (Note 13)	$R_{DS\ (ON)}$	—	—	0.068	Ω	V_{GS} = 10V, I_D = 12A
				0.100		V_{GS} = 4.5V, I_D = 6A
Forward Transconductance (Notes 13 & 14)	g_{fs}	—	19.7	—	S	V_{DS} = 15V, I_D = 12A
Diode Forward Voltage (Note 13)	V_{SD}	—	0.98	1.15	V	I_S = 12A, V_{GS} = 0
Reverse-Recovery Time (Note 14)	t_{RR}	—	145	—	ns	I_S = 12A, di/dt = 100A/µs
Reverse-Recovery Charge (Note 14)	Q_{RR}	—	929	—	nC	
DYNAMIC CHARACTERISTICS (Note 14)						
Input Capacitance	C_{iss}	—	502	—	pF	V_{DS} = 30V, V_{GS} = 0 f = 1MHz
Output Capacitance	C_{oss}	—	45.7	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	27.1	—	pF	
Total Gate Charge	Q_g	—	5.55	—	nC	V_{GS} = 4.5V; V_{DS} = 30V, I_D = 12A
Total Gate Charge	Q_g	—	10.3	—	nC	V_{GS} = 10V; V_{DS} = 30V, I_D = 12A
Gate-Source Charge	Q_{gs}	—	1.6	—	nC	V_{GS} = 10V; V_{DS} = 30V, I_D = 12A
Gate-Drain Charge	Q_{gd}	—	3.5	—	nC	V_{GS} = 10V; V_{DS} = 30V, I_D = 12A
Turn-On Delay Time (Note 15)	$t_{D(ON)}$	—	3.6	—	ns	V_{DD} = 30V, V_{GS} = 10V I_D = 12A, $R_G \cong$ 6.0Ω
Turn-On Rise Time (Note 15)	t_R	—	10.8	—	ns	
Turn-Off Delay Time (Note 15)	$t_{D(OFF)}$	—	11.9	—	ns	
Turn-Off Fall Time (Note 15)	t_F	—	8.7	—	ns	

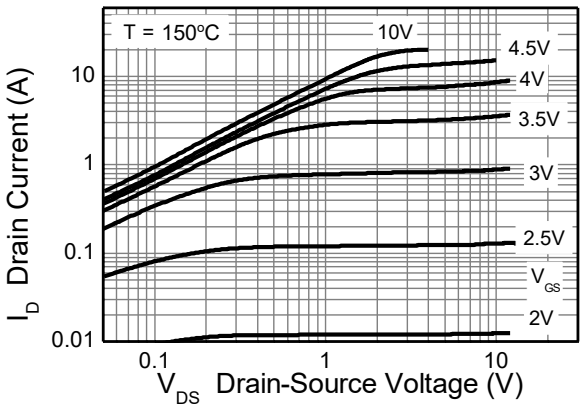
Notes: 13. Measured under pulsed conditions. Pulse width ≤ 300µs; duty cycle ≤ 2%.
14. For design aid only, not subject to production testing.
15. Switching characteristics are independent of operating junction temperatures.

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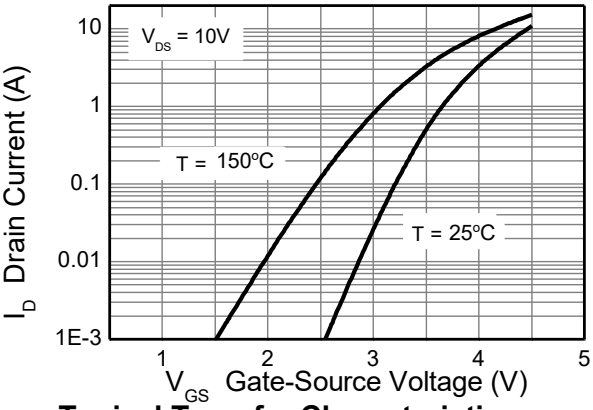
Typical Characteristics



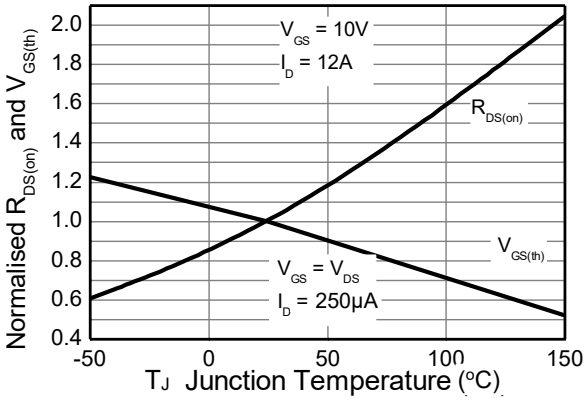
Output Characteristics



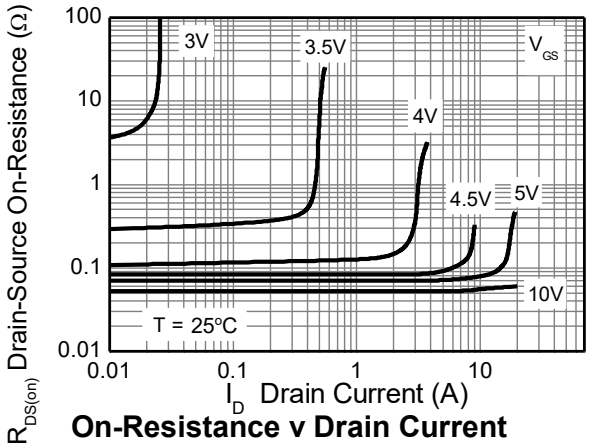
Output Characteristics



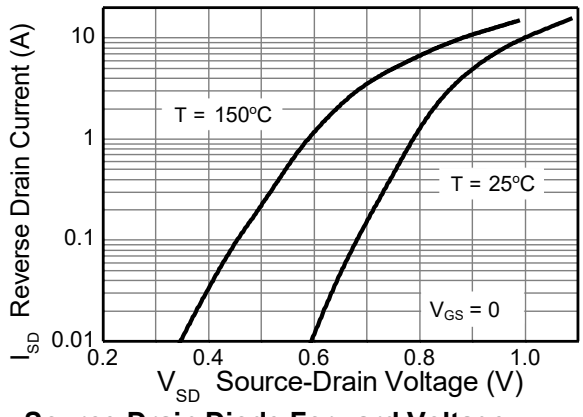
Typical Transfer Characteristics



Normalised Curves v Temperature



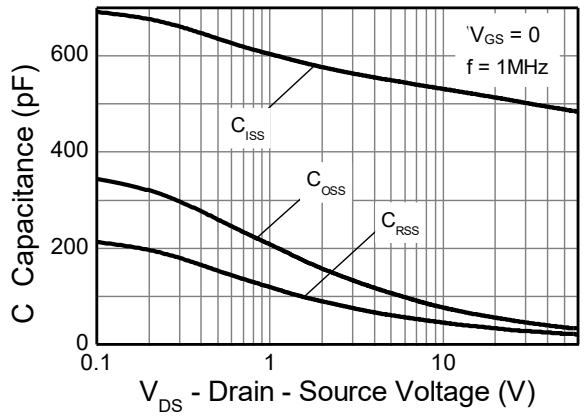
On-Resistance v Drain Current



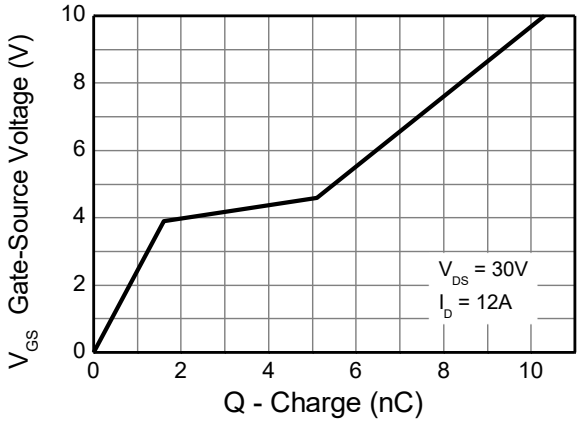
Source-Drain Diode Forward Voltage

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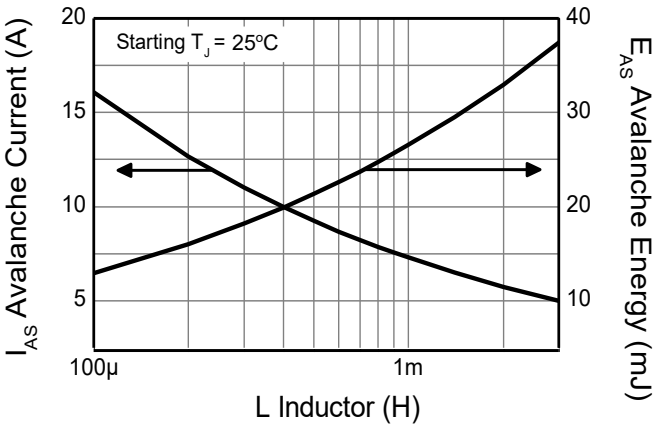
Typical Characteristics (continued)



Capacitance v Drain-Source Voltage



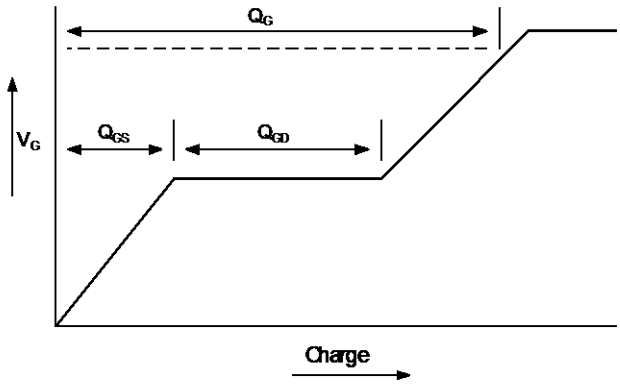
Gate-Source Voltage v Gate Charge



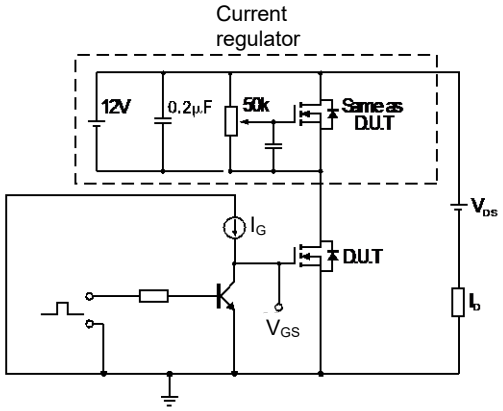
Single-Pulsed Avalanche Rating

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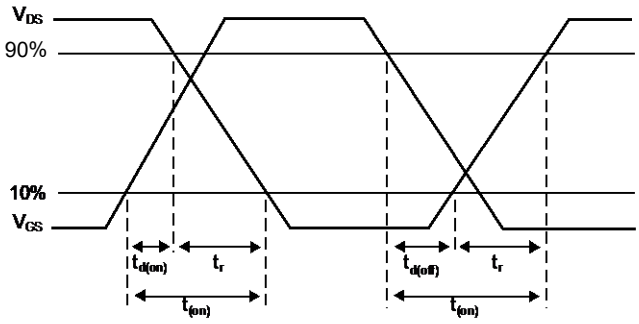
Test Circuits



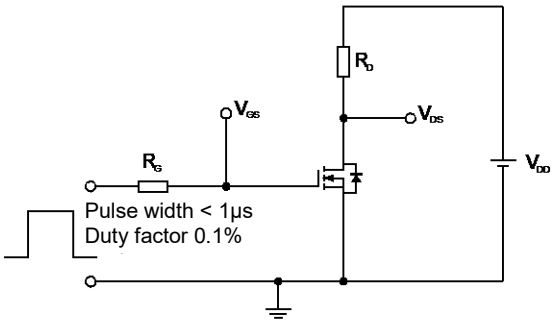
Basic Gate Charge Waveform



Gate Charge Test Circuit



Switching Time Waveforms



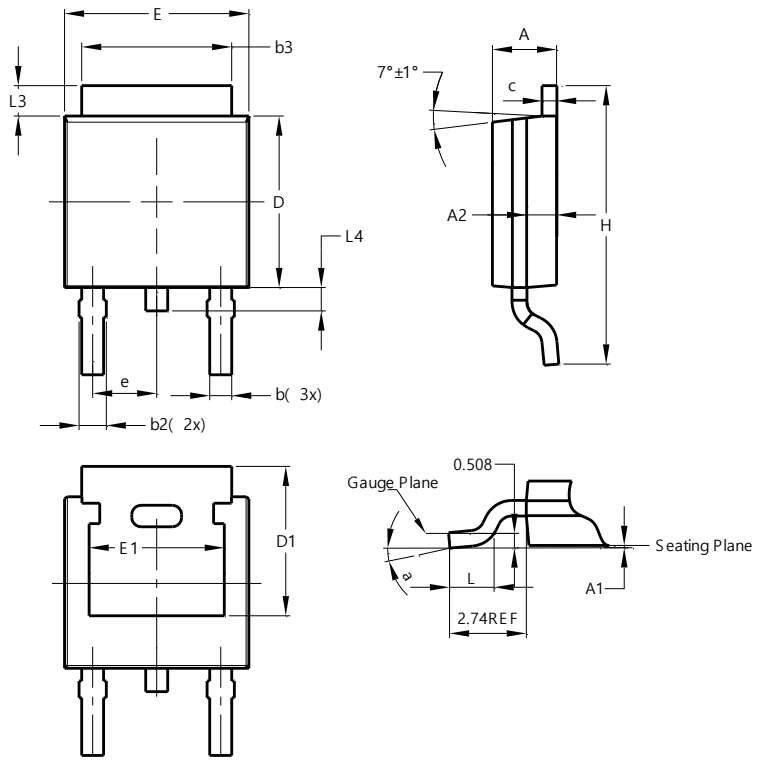
Switching Time Test Circuit

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Package Outline Dimensions

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

TO252 (DPAK)

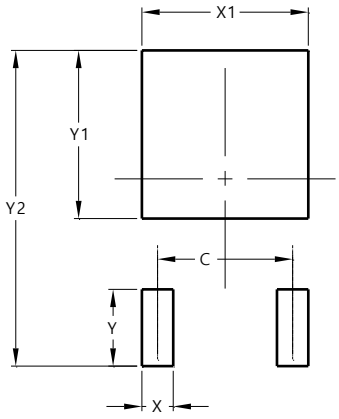


TO252 (DPAK)			
Dim	**Min**	**Max**	**Typ**
A	2.19	2.39	2.29
A1	0.00	0.13	0.08
A2	0.97	1.17	1.07
b	0.64	0.88	0.783
b2	0.76	1.14	0.95
b3	5.21	5.50	5.33
c	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	--	--
e	2.286 BSC		
E	6.45	6.70	6.58
E1	4.32	--	--
H	9.40	10.41	9.91
L	1.40	1.78	1.59
L3	0.88	1.27	1.08
L4	0.64	1.02	0.83
a	0°	10°	--
All Dimensions in mm			

Suggested Pad Layout

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

TO252 (DPAK)



Dimensions	Value (in mm)
C	4.572
X	1.060
X1	5.632
Y	2.600
Y1	5.700
Y2	10.700

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Üretici parça numarasını yazın; stok ve fiyatı hemen görün.

www.entegreci.com

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Kategorilere göz atın

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Üreticileri görün

Toplu alım ve teklif

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Teklif isteyin

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