



## Product Summary

$V_{(BR)DSS}$	$R_{DS(on)}$	$I_D$ $T_A = 25^\circ C$
-30V	25m $\Omega$ @ $V_{GS} = -10V$	-16.1A
	41m $\Omega$ @ $V_{GS} = -4.5V$	-12.5A

## Description and Applications

This new generation 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.

- Backlighting
- DC-DC Converters
- Power management functions

## Features and Benefits

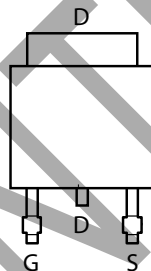
- Low on-resistance
- Fast switching speed
- "Green" component and RoHS compliant (Note 1)

## Mechanical Data

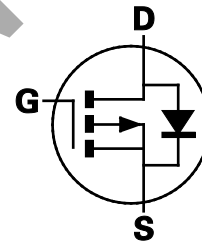
- Case: TO252-3L
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0 (Note 1)
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals Connections: See Diagram
- Terminals: Matte Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: See Below
- Ordering Information: See Below
- Weight: 0.33 grams (approximate)



Top View



Pin Out -Top View



Equivalent Circuit

## Ordering Information (Note 1)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DMP3025LK3-13	P3025L	13	16	2,500

Note: 1. Diodes, Inc. defines "Green" products as those which are Eu RoHS compliant and contain no halogens or antimony compounds; further information about Diodes Inc.'s "Green" Policy can be found on our website. For packaging details, go to our website.

## Marking Information



DII = Manufacturer's Marking  
 P3025L = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Year (ex: 09 = 2009)  
 WW = Week (01-52)

**Maximum Ratings** @T<sub>A</sub> = 25°C unless otherwise specified

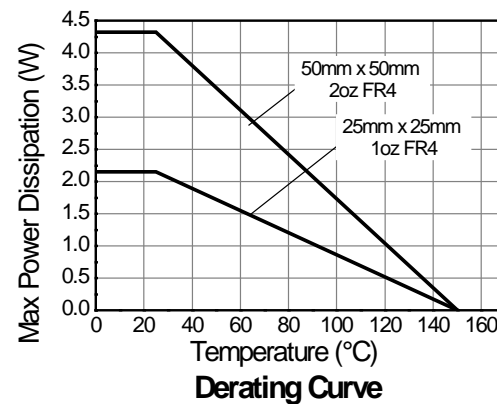
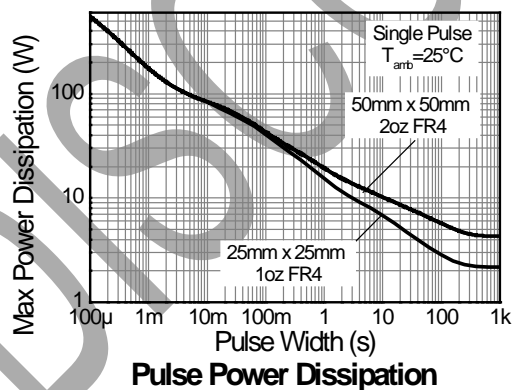
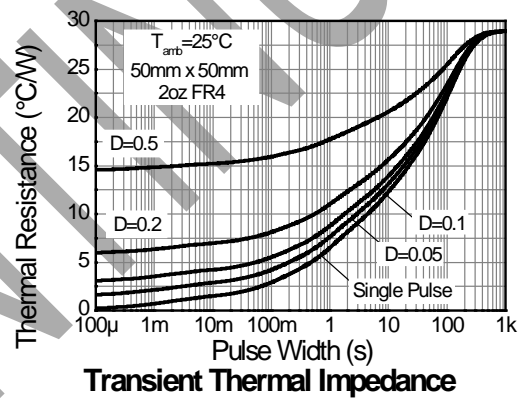
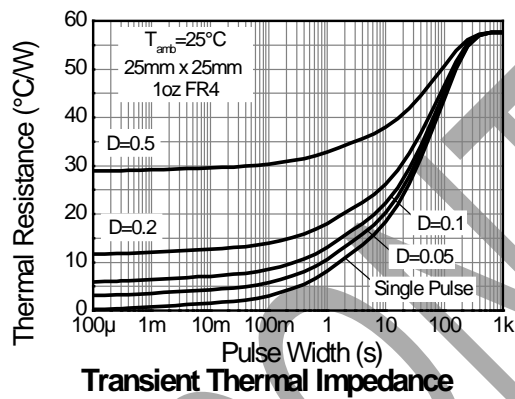
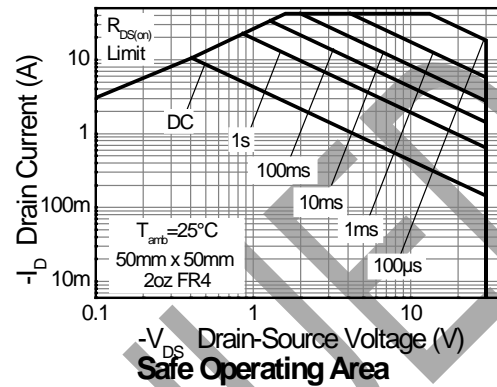
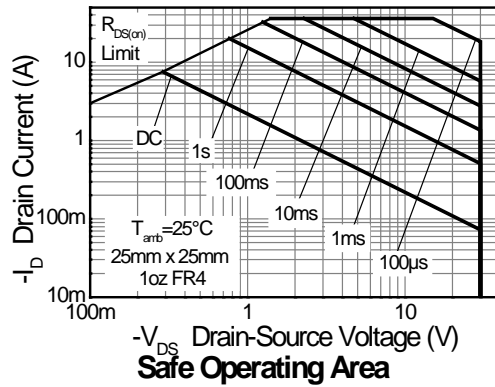
Characteristic			Symbol	Value	Unit
Drain-Source voltage			V <sub>DSS</sub>	-30	V
Gate-Source voltage			V <sub>GS</sub>	±20	V
Continuous Drain current	V <sub>GS</sub> = 10V	(Note 3)	I <sub>D</sub>	-16.1	A
		T <sub>A</sub> = 70°C (Note 3)		-12.9	
		(Note 2)		-10.6	
Pulsed Drain current	V <sub>GS</sub> = 10V	(Note 4)	I <sub>DM</sub>	-41.9	A
Continuous Source current (Body diode)			I <sub>S</sub>	-12.6	A
Pulsed Source current (Body diode)			I <sub>SM</sub>	-41.9	A

**Thermal Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Power dissipation Linear derating factor	(Note 2)	P <sub>D</sub>	4.3	W mW/°C
			34.5	
	(Note 3)		10.0	
			80.0	
	(Note 5)		2.15	
			17.2	
Thermal Resistance, Junction to Ambient	(Note 2)	R <sub>θJA</sub>	29.0	°C/W
	(Note 3)		12.5	
	(Note 5)		58.0	
Thermal Resistance, Junction to Lead	(Note 6)	R <sub>θJL</sub>	1.02	
Operating and storage temperature range		T <sub>J</sub> , T <sub>STG</sub>	-55 to 150	°C

- Notes:
2. For a device surface mounted on 50mm x 50mm x 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.
  3. Same as note 2, except the device is measured at t ≤ 10 sec.
  4. Same as note 2, except the device is pulsed with D = 0.02 and pulse width 300 μs. The pulse current is limited by the maximum junction temperature.
  5. For a device surface mounted on 25mm x 25mm x 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.
  6. Thermal resistance from junction to solder-point (at the end of the drain lead).

## Thermal Characteristics

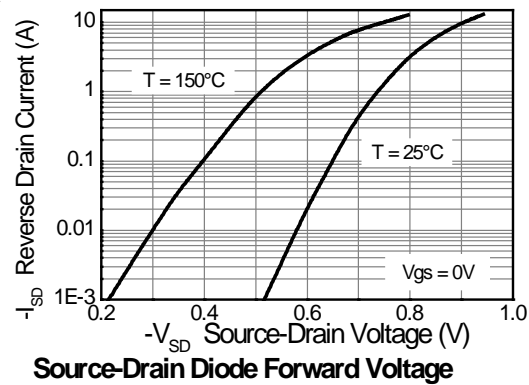
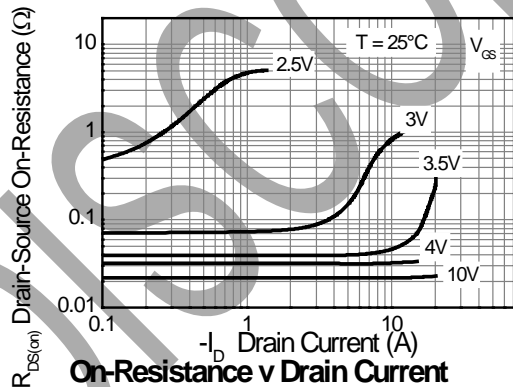
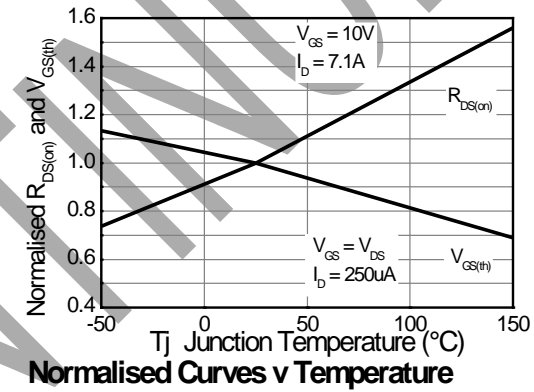
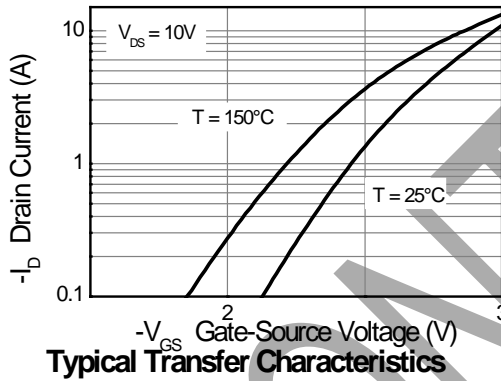
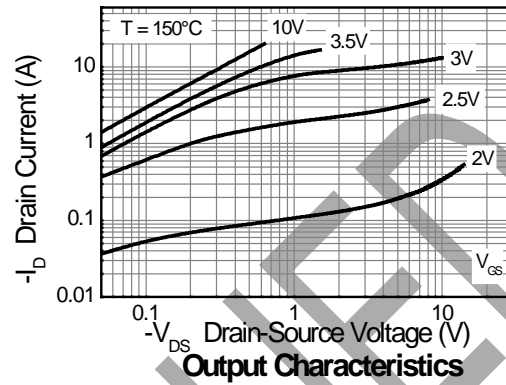
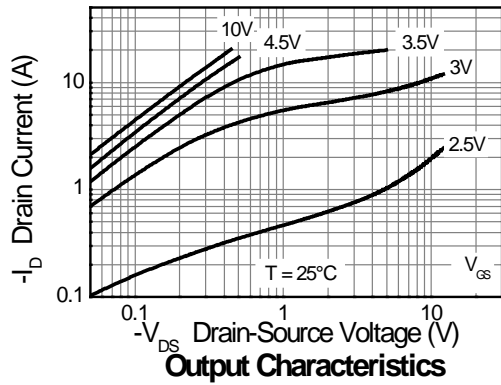


**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

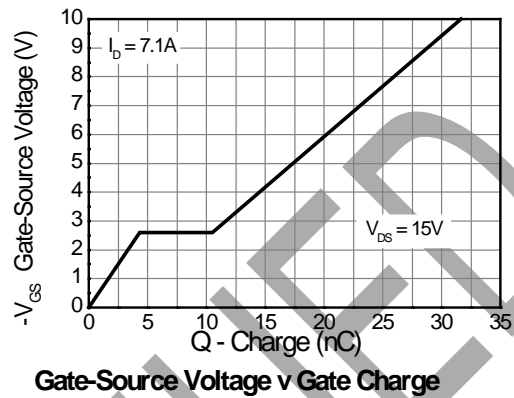
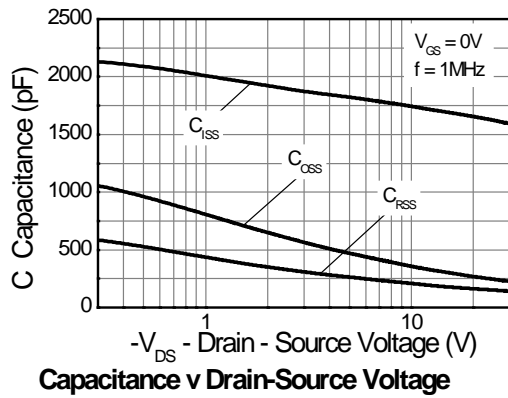
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage	$BV_{DSS}$	-30	—	—	V	$I_D = -250\mu A$ , $V_{GS} = 0V$	
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	-0.5	$\mu A$	$V_{DS} = -30V$ , $V_{GS} = 0V$	
Gate-Source Leakage	$I_{GSS}$	—	—	$\pm 100$	nA	$V_{GS} = \pm 20V$ , $V_{DS} = 0V$	
ON CHARACTERISTICS							
Gate Threshold Voltage	$V_{GS(th)}$	-1.0	—	-3.0	V	$I_D = -250\mu A$ , $V_{DS} = V_{GS}$	
Static Drain-Source On-Resistance (Note 7)	$R_{DS(ON)}$	—	—	0.025	•	$V_{GS} = -10V$ , $I_D = -7.1A$	
				0.041		$V_{GS} = -4.5V$ , $I_D = -5.5A$	
Forward Transconductance (Notes 7 & 8)	$g_{fs}$	—	18.6	—	S	$V_{DS} = -15V$ , $I_D = -7.1A$	
Diode Forward Voltage (Note 7)	$V_{SD}$	—	-0.80	-1.2	V	$I_S = -1.7A$ , $V_{GS} = 0V$	
Reverse recovery time (Note 8)	$t_{rr}$	—	16.2	—	ns	$I_S = -2.2A$ , $di/dt = 100A/\mu s$	
Reverse recovery charge (Note 8)	$Q_{rr}$	—	10	—	nC		
DYNAMIC CHARACTERISTICS (Note 8)							
Input Capacitance	$C_{iss}$	—	1678	—	pF	$V_{DS} = -15V$ , $V_{GS} = 0V$ $f = 1MHz$	
Output Capacitance	$C_{oss}$	—	303	—	pF		
Reverse Transfer Capacitance	$C_{rss}$	—	178	—	pF		
Total Gate Charge	$Q_g$	—	16.5	—	nC	$V_{GS} = -4.5V$	$V_{DS} = -15V$ , $I_D = -7.1A$
Total Gate Charge	$Q_g$	—	31.6	—	nC	$V_{GS} = -10V$	
Gate-Source Charge	$Q_{gs}$	—	4.3	—	nC		
Gate-Drain Charge	$Q_{gd}$	—	6.2	—	nC		
Turn-On Delay Time (Note 9)	$t_{D(on)}$	—	3.5	—	ns	$V_{DD} = -15V$ , $V_{GS} = -10V$ $I_D = -1A$ , $R_G \cong 6.0\Omega$	
Turn-On Rise Time (Note 9)	$t_r$	—	4.9	—	ns		
Turn-Off Delay Time (Note 9)	$t_{D(off)}$	—	44	—	ns		
Turn-Off Fall Time (Note 9)	$t_f$	—	23	—	ns		

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

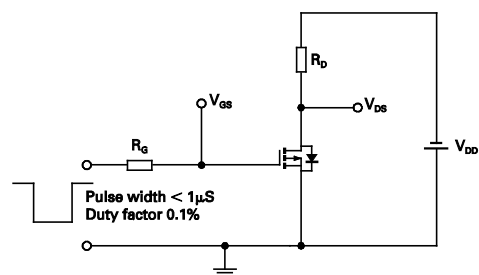
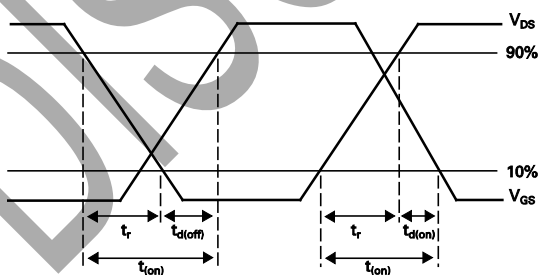
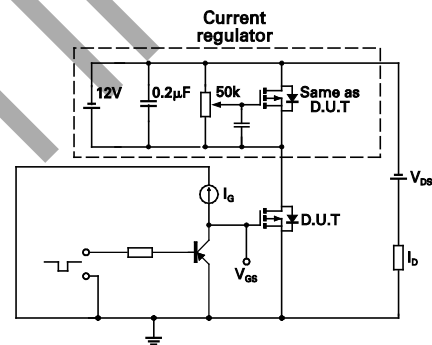
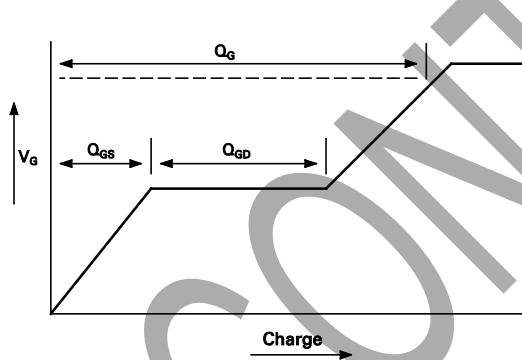
## Typical Characteristics



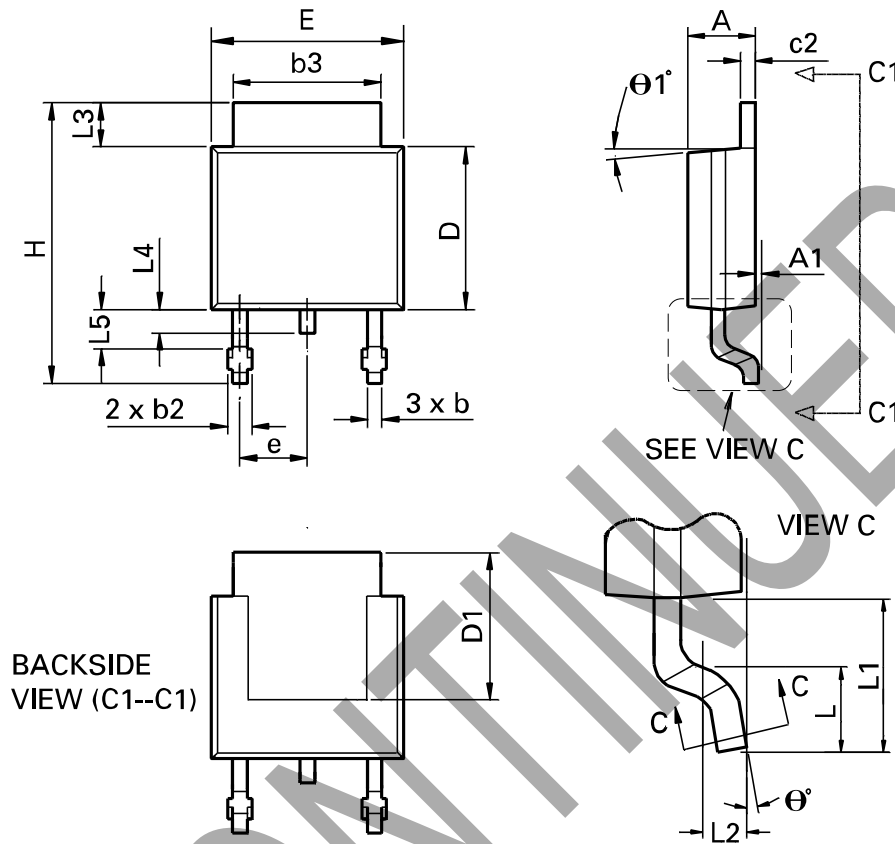
## Typical Characteristics - continued



## Test Circuits

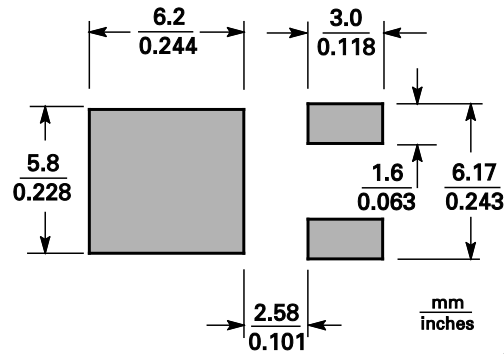


## Package Outline Dimensions



DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min	Max	Min	Max		Min	Max	Min	Max
A	0.086	0.094	2.18	2.39	e	0.090 BSC		2.29 BSC	
A1	-	0.005	-	0.127	H	0.370	0.410	9.40	10.41
b	0.020	0.035	0.508	0.89	L	0.055	0.070	1.40	1.78
b2	0.030	0.045	0.762	1.14	L1	0.108 REF		2.74 REF	
b3	0.205	0.215	5.21	5.46	L2	0.020 BSC		0.508 BSC	
c	0.018	0.024	0.457	0.61	L3	0.035	0.065	0.89	1.65
c2	0.018	0.023	0.457	0.584	L4	0.025	0.040	0.635	1.016
D	0.213	0.245	5.41	6.22	L5	0.045	0.060	1.14	1.52
D1	0.205	-	5.21	-	•1°	0°	10°	0°	10°
E	0.250	0.265	6.35	6.73	•°	0°	15°	0°	15°
E1	0.170	-	4.32	-	-	-	-	-	-

## Suggested Pad Layout



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