

Product Summary

$V_{(BR)DSS}$	$R_{DS(on) \max}$	I_D $T_A = 25^\circ\text{C}$
-30V	75m Ω @ $V_{GS} = -10\text{V}$	-3.9A
	105m Ω @ $V_{GS} = -4.5\text{V}$	-3.3A

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.

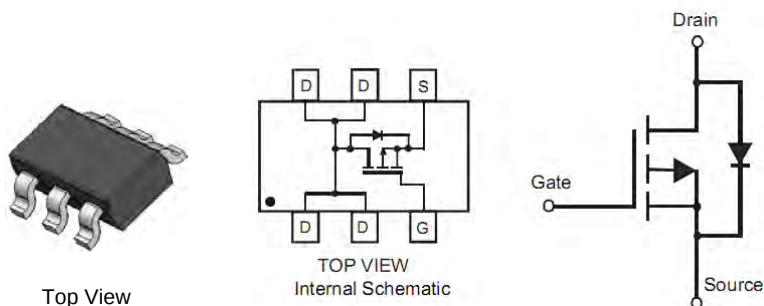
- DC-DC Converters
- Power management functions
- Backlighting
- Motor Control

Features and Benefits

- Low Input Capacitance
- Low On-Resistance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead, Halogen, and Antimony Free, RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: TSOT26
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.013 grams (approximate)

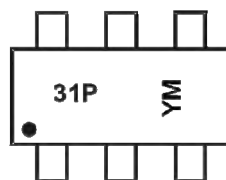


Ordering Information (Note 3)

Part Number	Case	Packaging
DMP3105LVT-7	TSOT26	3,000/Tape & Reel

- Notes:
1. No purposefully added lead. Halogen and Antimony Free.
 2. Diodes Inc.'s "Green" policy can be found on our website at <http://www.diodes.com>.
 3. For packaging details, go to our website at <http://www.diodes.com>.

Marking Information



31P = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: X = 2010)
 M = Month (ex: 9 = September)

Date Code Key

Year	2010	2011	2012	2013	2014	2015	2016
Code	X	Y	Z	A	B	C	D

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			V _{DSS}	-30	V
Gate-Source Voltage			V _{GSS}	±12	V
Continuous Drain Current (Note 4) V _{GS} = -10V	Steady State	T _A = 25°C	I _D	3.1	A
		T _A = 70°C		2.5	
Continuous Drain Current (Note 4) V _{GS} = -4.5V	Steady State	T _A = 25°C	I _D	2.7	A
		T _A = 70°C		2.2	
Continuous Drain Current (Note 5) V _{GS} = -10V	Steady State	T _A = 25°C	I _D	3.9	A
		T _A = 70°C		3.1	
Continuous Drain Current (Note 5) V _{GS} = -4.5V	Steady State	T _A = 25°C	I _D	3.3	A
		T _A = 70°C		2.7	
Maximum Continuous Body Diode Forward Current			I _S	2.2	A
Pulsed Drain Current (10us pulse, duty cycle=1%)			I _{DM}	20	A

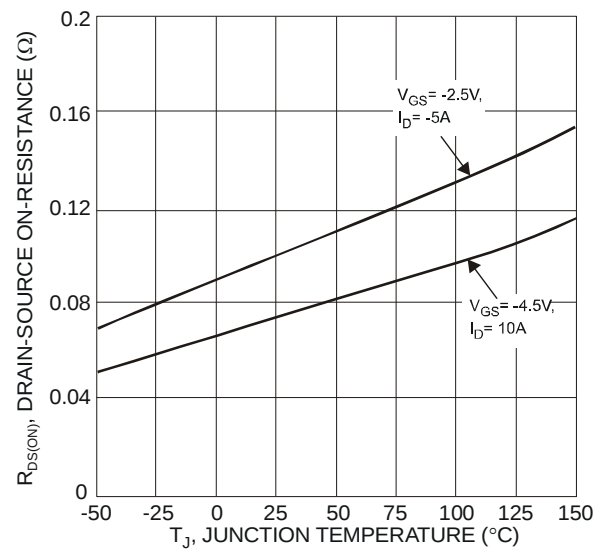
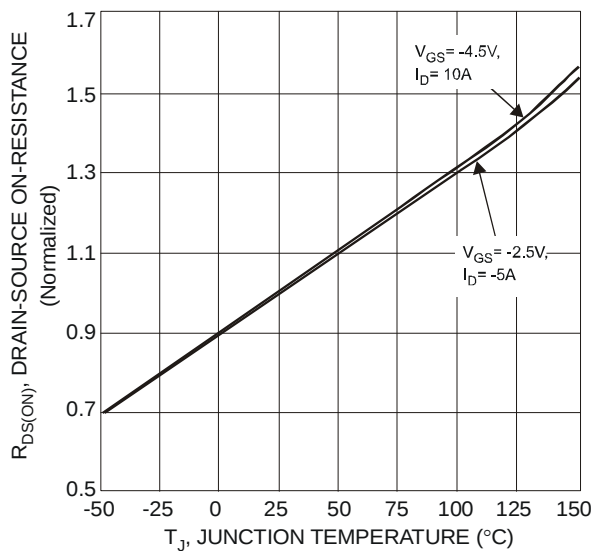
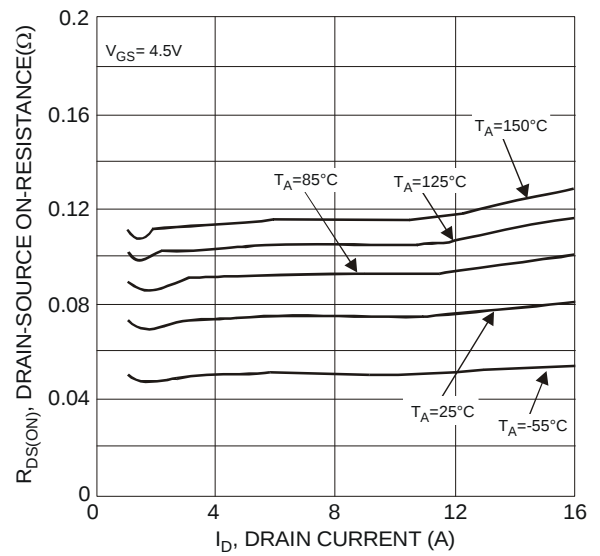
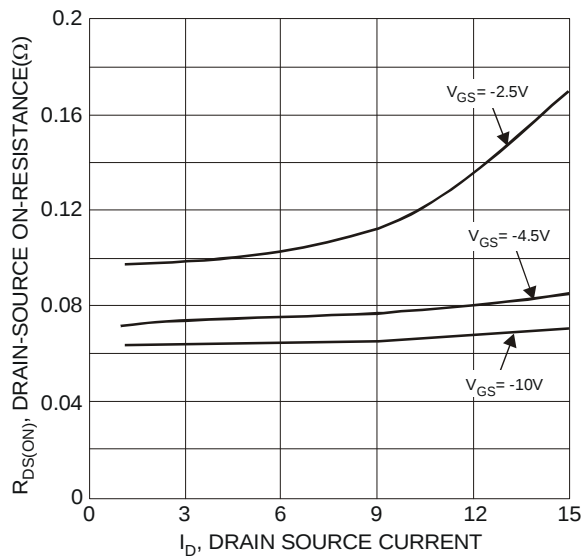
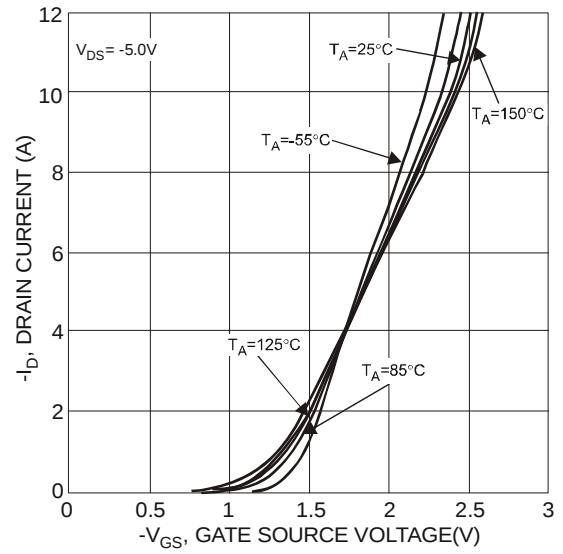
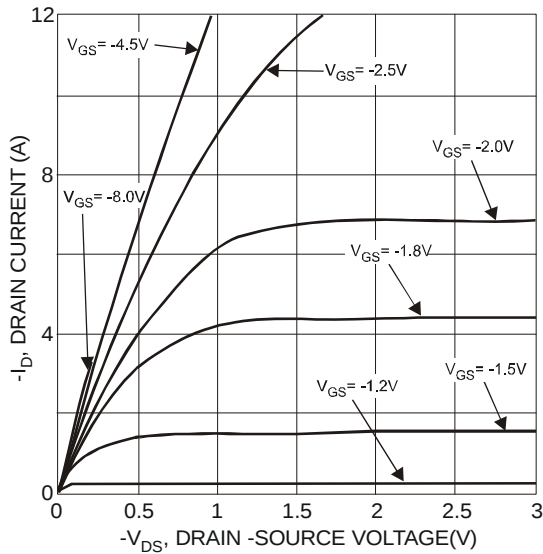
Thermal Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 4)	P _D	1.15	W
Thermal Resistance, Junction to Ambient (Note 4)	R _{θJA}	108	°C/W
Total Power Dissipation (Note 5)	P _D	1.75	W
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	72	°C/W
Thermal Resistance, Junction to Case (Note 5)	R _{θJC}	23.4	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)						
Drain-Source Breakdown Voltage	BV _{DSS}	-30	—	—	V	V _{GS} = 0V, I _D = -250μA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	-100	nA	V _{DS} = -30V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±12V, V _{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	V _{GS(th)}	-0.5	-0.9	-1.5	V	V _{DS} = V _{GS} , I _D = -250μA
Static Drain-Source On-Resistance	R _{DS(on)}	—	65	75	mΩ	V _{GS} = -10V, I _D = -4.2A
		—	75	98		V _{GS} = -4.5V, I _D = -4.0A
		—	98	150		V _{GS} = -2.5V, I _D = -3.0A
Forward Transfer Admittance	Y _{fs}	—	5	—	S	V _{DS} = -15V, I _D = -4.0A
Diode Forward Voltage	V _{SD}	—	-0.7	-1.0	V	V _{GS} = 0V, I _S = -1A
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C _{iss}	—	839	—	pF	V _{DS} = -15V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	47	—		
Reverse Transfer Capacitance	C _{rss}	—	43	—		
Gate Resistance	R _G	—	12.3	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1.0MHz
Total Gate Charge (V _{GS} = -4.5V)	Q _g	—	9.0	—	nC	V _{DS} = -15V, I _D = -4.0A
Total Gate Charge (V _{GS} = -10.0V)	Q _g	—	19.8	—		
Gate-Source Charge	Q _{gs}	—	1.6	—		
Gate-Drain Charge	Q _{gd}	—	1.1	—		
Turn-On Delay Time	t _{D(on)}	—	9.7	—	ns	V _{GS} = -10V, V _{DD} = -15V, R _G = 6Ω, I _D = -1A
Turn-On Rise Time	t _r	—	17.7	—		
Turn-Off Delay Time	t _{D(off)}	—	269	—		
Turn-Off Fall Time	t _f	—	64	—		

- Notes:
4. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
 5. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal vias to bottom layer 1inch square copper plate
 6. Short duration pulse test used to minimize self-heating effect.
 7. Guaranteed by design. Not subject to production testing.



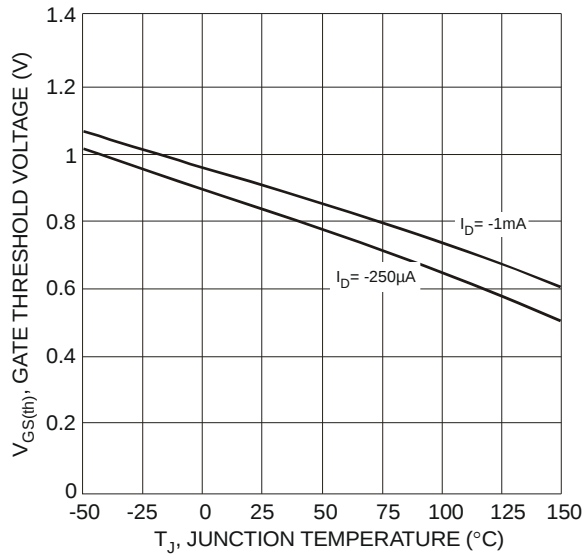


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

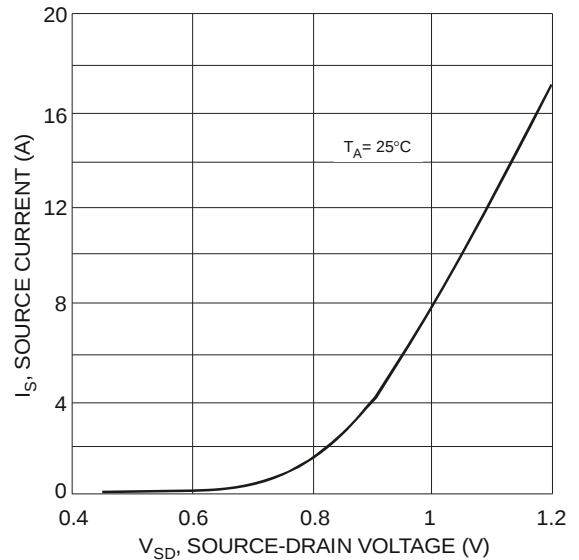


Fig. 8 Diode Forward Voltage vs. Current

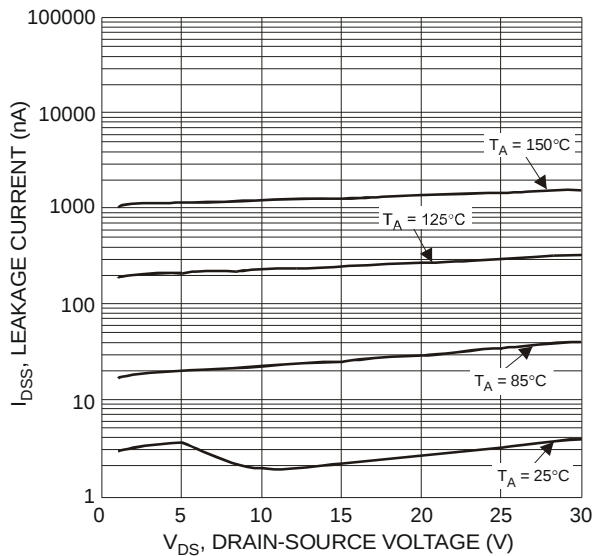


Fig. 9 Typical Drain-Source Leakage Current vs. Voltage

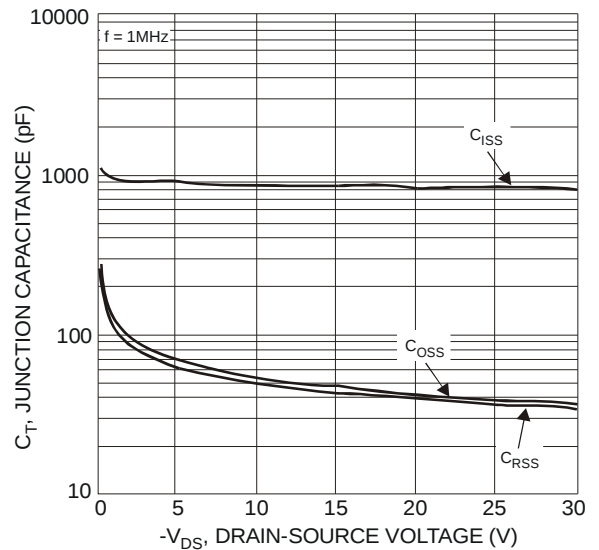


Fig. 10 Typical Junction Capacitance

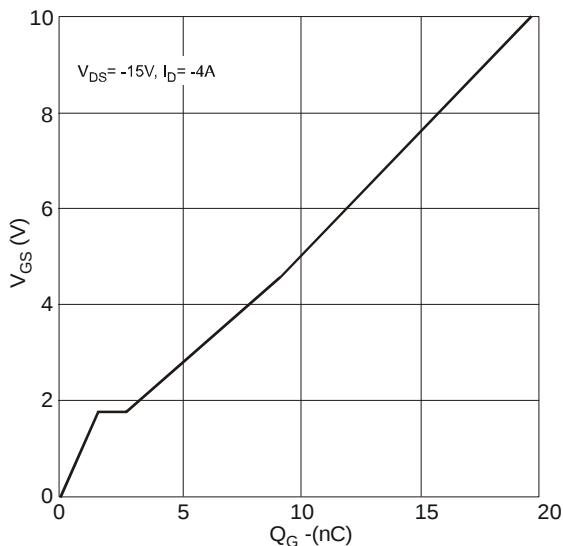


Fig. 11 Gate Charge Characteristics

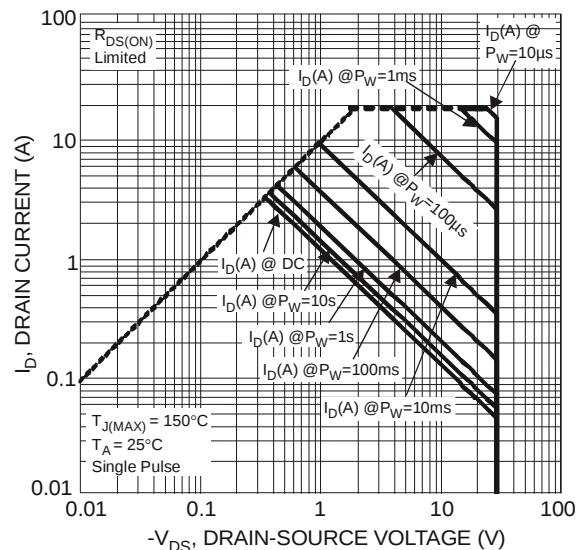
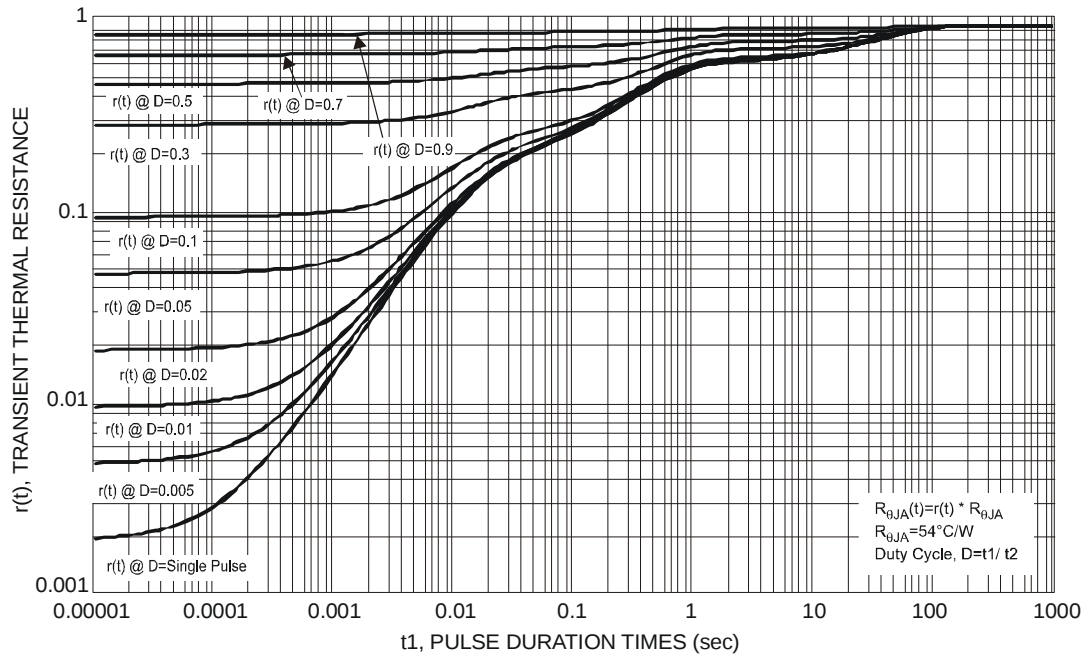
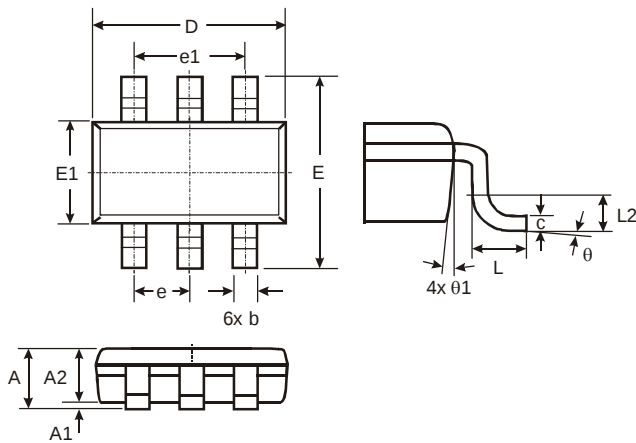


Fig. 12 SOA, Safe Operation Area

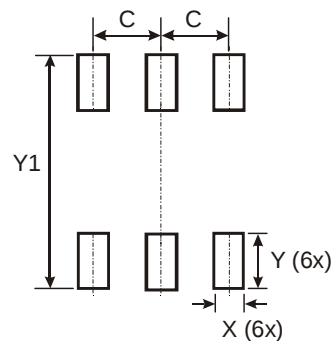


Package Outline Dimensions



TSOT26			
Dim	Min	Max	Typ
A	—	1.00	—
A1	0.01	0.10	—
A2	0.84	0.90	—
D	—	—	2.90
E	—	—	2.80
E1	—	—	1.60
b	0.30	0.45	—
c	0.12	0.20	—
e	—	—	0.95
e1	—	—	1.90
L	0.30	0.50	—
L2	—	—	0.25
θ	0°	8°	4°
θ_1	4°	12°	—
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
C	0.950
X	0.700
Y	1.000
Y1	3.199

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