

30V P-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(on) max}	I _D T _A = 25°C
201/	75mΩ @ V _{GS} = -10V	-3.9A
-30V	105mΩ @ V _{GS} = -4.5V	-3.3A

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

Description and Applications

This new generation MOSFET has been designed to minimize the onstate resistance ($R_{DS(on)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

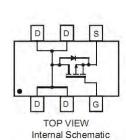
- DC-DC Converters
- Power management functions
- Backlighting
- Motor Control

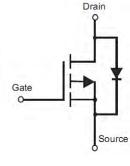
Mechanical Data

- 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)









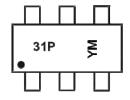
Ordering Information (Note 3)

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

Date Code Rey							
Year	2010	2011	2012	2013	2014	2015	2016
Code	X	Υ	Z	Α	В	С	D

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	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 $T_A = 70$ °C	I _D	3.1 2.5	А
Continuous Drain Current (Note 4) V _{GS} = -4.5V	Steady State	$T_A = 25$ °C $T_A = 70$ °C	I _D	2.7 2.2	А
Continuous Drain Current (Note 5) V _{GS} = -10V	Steady State	$T_A = 25$ °C $T_A = 70$ °C	I _D	3.9 3.1	А
Continuous Drain Current (Note 5) V _{GS} = -4.5V	Steady State	T _A = 25°C T _A = 70°C	I _D	3.3 2.7	А
Maximum Continuous Body Diode Forward Current	Is	2.2	А		
Pulsed Drain Current (10us pulse, duty cycle=1%)	I _{DM}	20	A		

Thermal Characteristics @TA = 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)	$R_{ heta JA}$	108	°C/W
Total Power Dissipation (Note 5)	P_{D}	1.75	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{ heta JA}$	72	°C/W
Thermal Resistance, Junction to Case (Note 5)	$R_{ heta Jc}$	23.4	°C/W
Operating and Storage Temperature Range	$T_{J_1}T_{STG}$	-55 to +150	°C

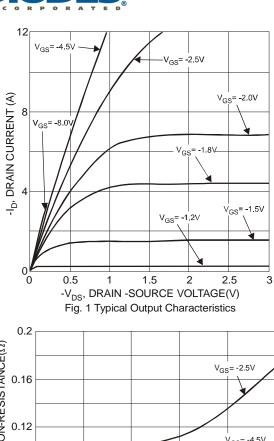
Electrical Characteristics @T_A = 25°C unless otherwise specified

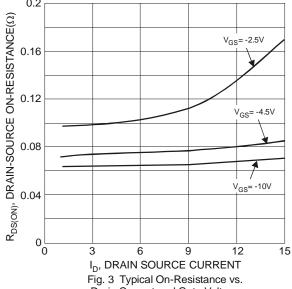
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 6)							
Drain-Source Breakdown Voltage	BV _{DSS}	-30	_	_	V	$V_{GS} = 0V$, $I_D = -250\mu A$	
Zero Gate Voltage Drain Current	I _{DSS}		_	-100	nA	$V_{DS} = -30V$, $V_{GS} = 0V$	
Gate-Source Leakage	I _{GSS}	_	_	±100	nA	$V_{GS} = \pm 12V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 6)							
Gate Threshold Voltage	V _{GS(th)}	-0.5	-0.9	-1.5	V	$V_{DS} = V_{GS}, I_{D} = -250 \mu A$	
			65	75		$V_{GS} = -10V, I_D = -4.2A$	
Static Drain-Source On-Resistance	R _{DS (ON)}	_	75	98	mΩ	$V_{GS} = -4.5V, I_D = -4.0A$	
	, ,	_	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	_		V _{DS} = -15V, V _{GS} = 0V f = 1.0MHz	
Output Capacitance	Coss	_	47	_	pF		
Reverse Transfer Capacitance	C _{rss}	_	43	_		I = I.OWITZ	
Gate Resistance	R_{G}	_	12.3	_	Ω	$V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz$	
Total Gate Charge (V _{GS} = -4.5V)	Qg	_	9.0	_			
Total Gate Charge (V _{GS} = -10.0V)	Q_g	_	19.8	_	nC	V 45V L 40A	
Gate-Source Charge	Q _{qs}	_	1.6	_	nc	$V_{DS} = -15V, I_{D} = -4.0A$	
Gate-Drain Charge	Q_{gd}	_	1.1	_			
Turn-On Delay Time	t _{D(on)}	_	9.7	_			
Turn-On Rise Time	t _r	_	17.7	_		$V_{GS} = -10V, V_{DD} = -15V, R_{G} = 6\Omega,$	
Turn-Off Delay Time	t _{D(off)}	_	269	_	ns	I _D = -1A	
Turn-Off Fall Time	t _f	_	64	_			

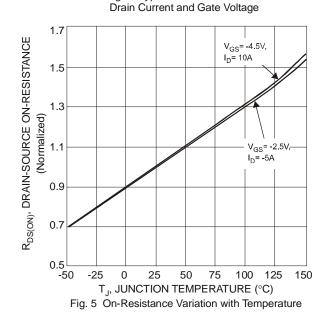
Notes:

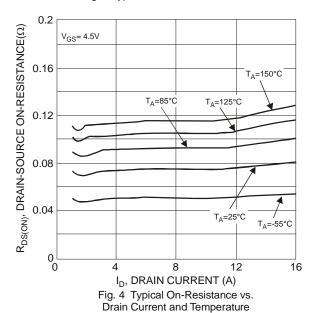
- Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
 Device mounted on FR-4 substrate PC board, 2oz copper, with thermal vias to bottom layer 1inch square copper plate
 Short duration pulse test used to minimize self-heating effect.
 Guaranteed by design. Not subject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

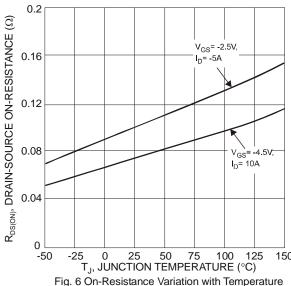














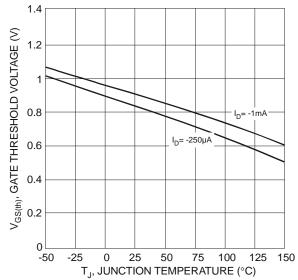


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

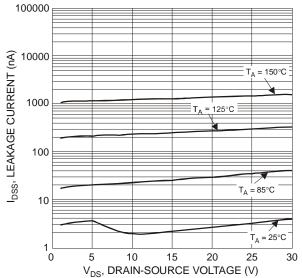


Fig. 9 Typical Drain-Source Leakage Current vs. Voltage

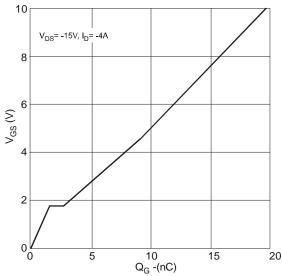
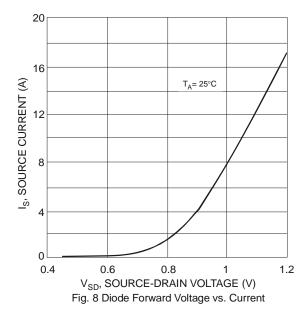
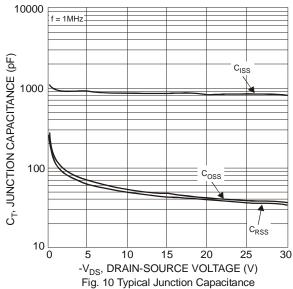


Fig. 11 Gate Charge Characteristics





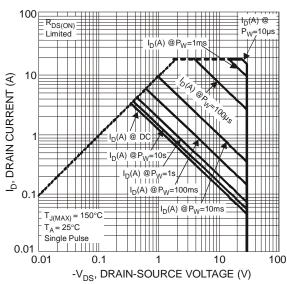
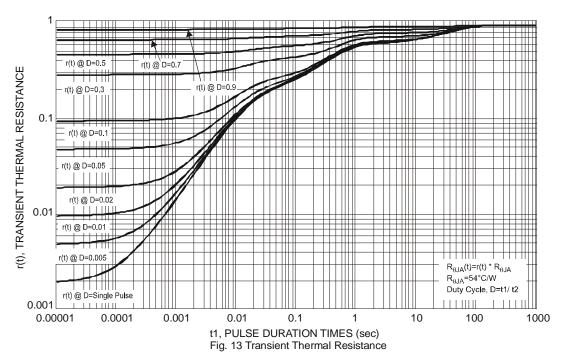
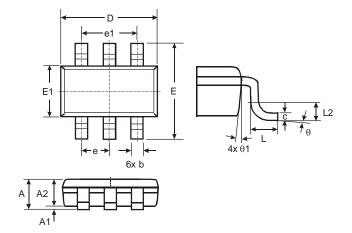


Fig. 12 SOA, Safe Operation Area



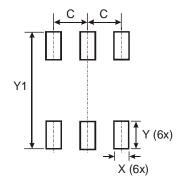


Package Outline Dimensions



TSOT26								
Dim	Min	Max	Тур					
Α	_	1.00	_					
A1	0.01	0.10	_					
A2	0.84	0.90	_					
D	1	1	2.90					
Е	_	_	2.80					
E1	_	_	1.60					
b	0.30	0.45						
С	0.12	0.20						
е	_	_	0.95					
e1	-		1.90					
L	0.30	0.50						
L2	_	_	0.25					
θ	0°	8°	4°					
θ1	4°	12°	_					
All D	All Dimensions in mm							

Suggested Pad Layout



Dimensions	Value (in mm)
С	0.950
Х	0.700
Υ	1.000
Y1	3.199



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