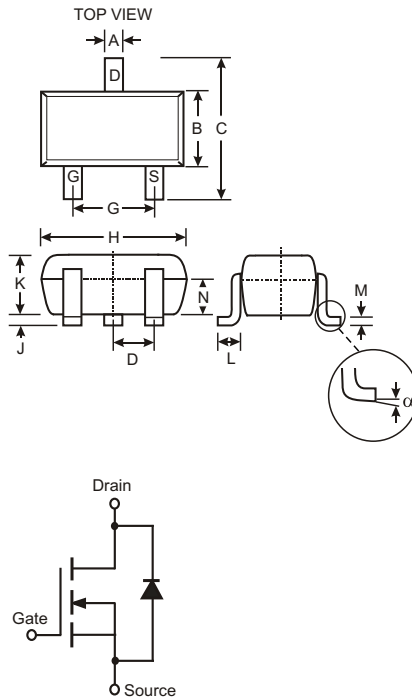


N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR
Features

Low On-Resistance
 Low Gate Threshold Voltage
 Low Input Capacitance
 Fast Switching Speed
 Low Input/Output Leakage
 Ultra-Small Surface Mount Package
Lead Free/RoHS Compliant (Note 2)
Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

Case: SOT-523
 Case Material: Molded Plastic. UL Flammability
 Classification Rating 94V-0
 Moisture Sensitivity: Level 1 per J-STD-020C
 Terminals: Solderable per MIL-STD-202, Method 208
 Lead Free Plating (Matte Tin Finish annealed over Alloy 42
 leadframe).
 Terminal Connections: See Diagram
 Marking: 72 (See Page 3)
 Ordering & Date Code Information, See Page 3
 Weight: 0.002 grams (approximate)



SOT-523			
Dim	Min	Max	Typ
A	0.15	0.30	0.22
B	0.75	0.85	0.80
C	1.45	1.75	1.60
D			0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
J	0.00	0.10	0.05
K	0.60	0.80	0.75
L	0.10	0.30	0.22
M	0.10	0.20	0.12
N	0.45	0.65	0.50
	0	8	
All Dimensions in mm			

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	60	V
Drain-Gate Voltage $R_{GS} = 1.0M$	V_{DGR}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Pulsed		± 40	
Drain Current (Note 1)	I_D	115	mA
Continuous		73	
Continuous @ 100°C		800	
Pulsed			
Total Power Dissipation (Note 1)	P_d	150	mW
Thermal Resistance, Junction to Ambient	R_{JA}	833	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_j, T_{STG}	-55 to +150	$^\circ\text{C}$

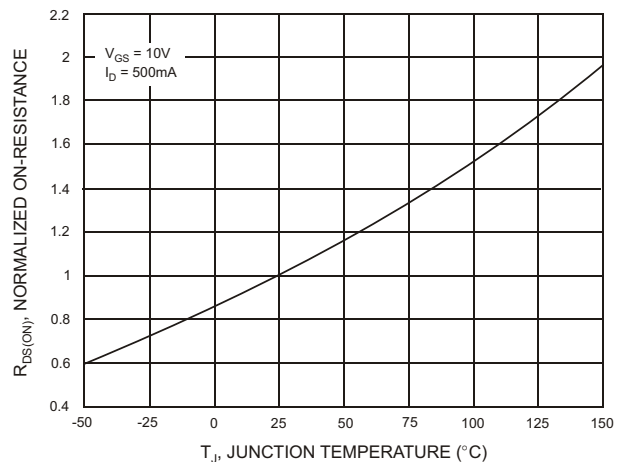
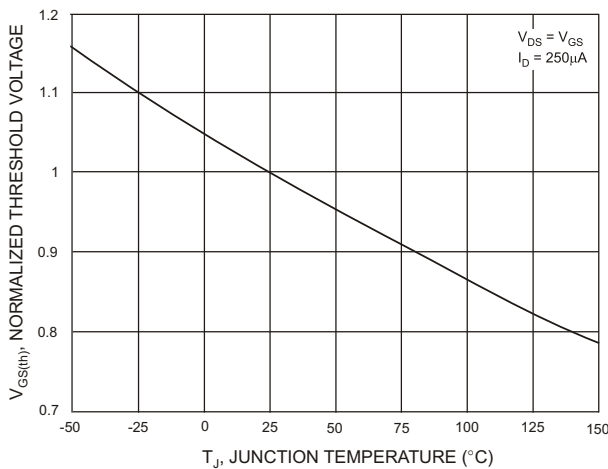
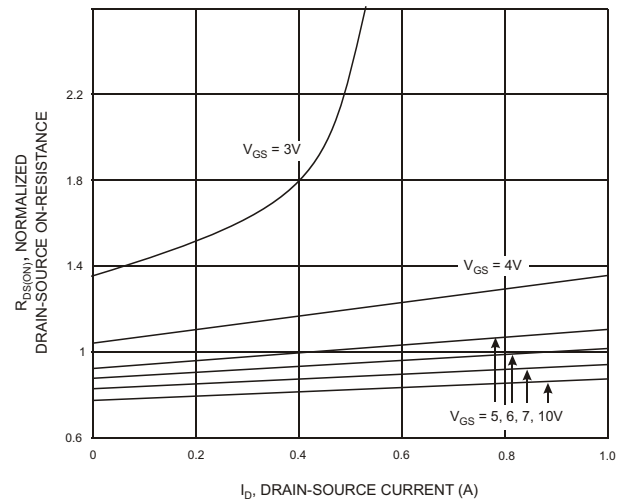
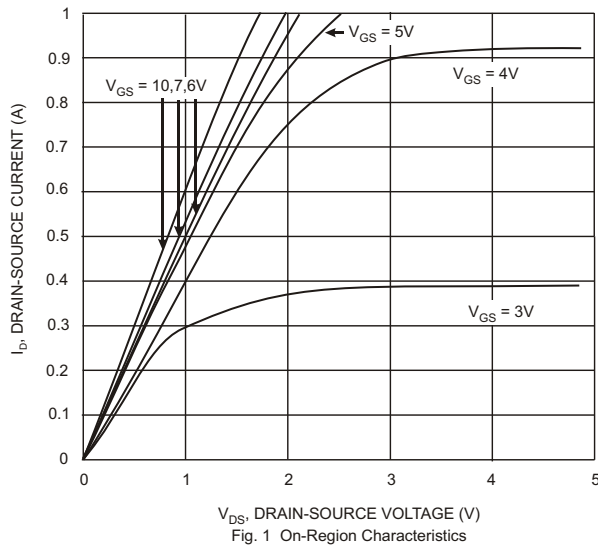
Note: 1. Device mounted on FR-5 PCB 1.0 x 0.75 x 0.062 inch pad layout as shown on Diodes, Inc. suggested pad layout AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
 2. No purposefully added lead.

Electrical Characteristics

 @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 3)						
Drain-Source Breakdown Voltage	BV _{DSS}	60			V	V _{GS} = 0V, I _D = 10 A
Zero Gate Voltage Drain Current @ T _C = 25°C @ T _C = 125°C	I _{DSS}			1.0 500	μA	V _{DS} = 60V, V _{GS} = 0V
Gate-Body Leakage	I _{GSS}			±10	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	1.0		2.0	V	V _{DS} = V _{GS} , I _D = 250 A
Static Drain-Source On-Resistance @ T _j = 25°C @ T _j = 125°C	R _{DS (ON)}		2.0	7.5		V _{GS} = 5.0V, I _D = 0.05A
			4.4	13.5		V _{GS} = 10V, I _D = 0.5A
On-State Drain Current	I _{D(ON)}	0.5	1.0		A	V _{GS} = 10V, V _{DS} = 7.5V
Forward Transconductance	g _{FS}	80			mS	V _{DS} = 10V, I _D = 0.2A
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{iss}		22	50	pF	V _{DS} = 25V, V _{GS} = 0V f = 1.0MHZ
Output Capacitance	C _{oss}		11	25	pF	
Reverse Transfer Capacitance	C _{rss}		2.0	5.0	pF	
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{D(ON)}		7.0	20	ns	V _{DD} = 30V, I _D = 0.2A, R _L = 150 Ω, V _{GEN} = 10V, R _{GEN} = 25 Ω
Turn-Off Delay Time	t _{D(OFF)}		11	20	ns	

Note: 3. Short duration test pulse used to minimize self-heating effect.



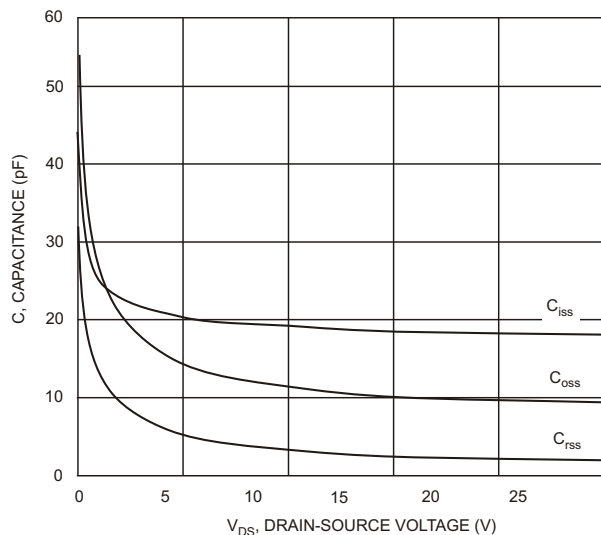


Fig. 5 Typical Capacitance

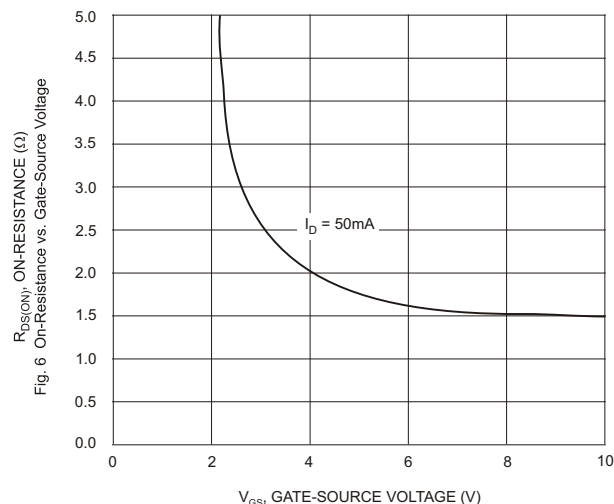


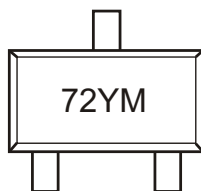
Fig. 6 On-Resistance vs. Gate-Source Voltage

Ordering Information (Note 4)

Device	Packaging	Shipping
2N7002T-7-F	SOT-523	3000/Tape & Reel

Notes: 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



72 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: N = 2002)
 M = Month (ex: 9 = September)

Date Code Key

Year	2002	2003	2004	2005	2006	2007	2008	2009
Code	N	P	R	S	T	U	V	W

Month	Jan	Feb	March	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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