

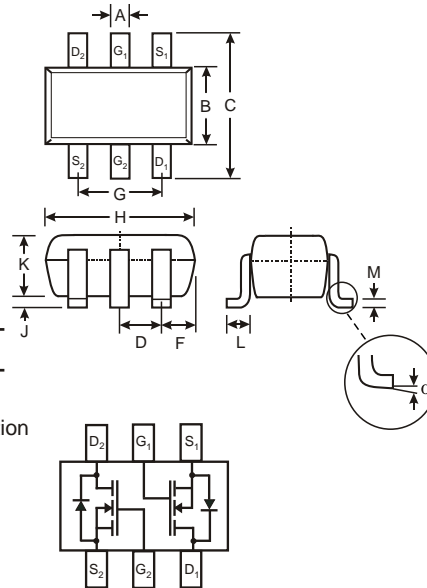
DUAL N-CHANNEL ENHANCEMENT MODE FIELD EFFECT TRANSISTOR

Features

- Dual N-Channel MOSFET
- 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-363
- 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 (See Page 2): K72
- Ordering & Date Code Information: See Page 2
- Weight: 0.006 grams (approx.)



SOT-363		
Dim	Min	Max
A	0.10	0.30
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
F	0.30	0.40
H	1.80	2.20
J		0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.25
	0°	8°
All Dimensions in mm		

Maximum Ratings @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	2N7002DW	Units
Drain-Source Voltage	V _{DSS}	60	V
Drain-Gate Voltage R _{GS} 1.0M	V _{DGR}	60	V
Gate-Source Voltage (Note 1)	V _{GSS}	±20	V
Continuous Pulsed		±40	
Drain Current (Note 1)	I _D	115	mA
Continuous @ 100°C		73	
Pulsed		800	
Total Power Dissipation Derating above T _A = 25°C (Note 1)	P _d	200	mW
		1.60	
Thermal Resistance, Junction to Ambient	R _{JA}	625	°C/W
Operating and Storage Temperature Range	T _j , T _{STG}	-55 to +150	°C

- Notes:
1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document 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°C unless otherwise specified

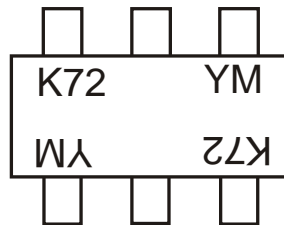
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 3)						
Drain-Source Breakdown Voltage	BV _{DSS}	60	70		V	V _{GS} = 0V, I _D = 10μA
Zero Gate Voltage Drain Current	I _{DSS}			1.0 500	μA	V _{DS} = 60V, V _{GS} = 0V
Gate-Body Leakage	I _{GSS}			±10	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	1.0		2.0	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(on)}		3.2 4.4	7.5 13.5		V _{GS} = 5.0V, I _D = 0.05A 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 , V _{GEN} = 10V, R _{GEN} = 25
Turn-Off Delay Time	t _{D(off)}		11	20	ns	

Ordering Information (Note 4)

Device	Packaging	Shipping
2N7002DW-7-F	SOT-363	3000/Tape & Reel

- Notes:
- Short duration test pulse used to minimize self-heating effect.
 - For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



K72= Product Type Marking Code
 YM = Date Code Marking
 Y = Year ex: N = 2002
 M = Month ex: 9 = September

Date Code Key

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Code	J	K	L	M	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

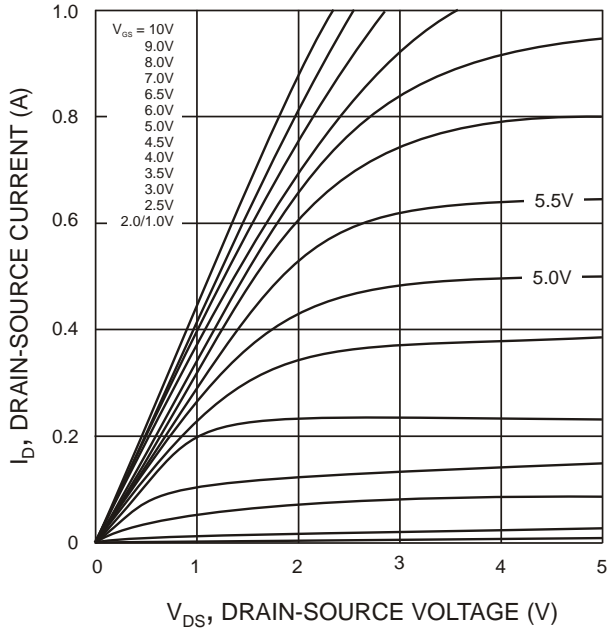


Fig. 1 On-Region Characteristics

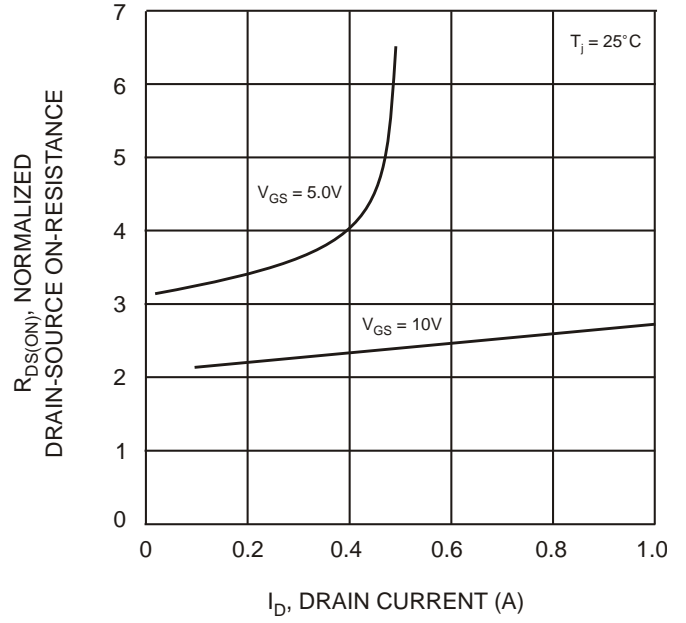


Fig. 2 On-Resistance vs Drain Current

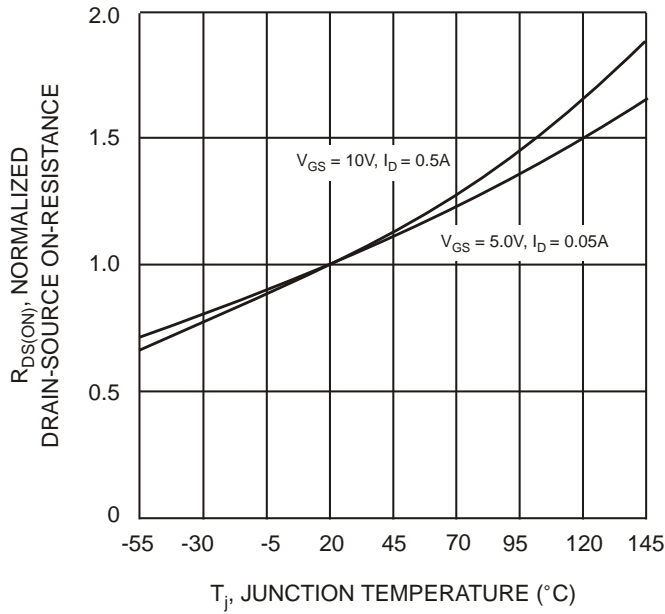


Fig. 3 On-Resistance vs Junction Temperature

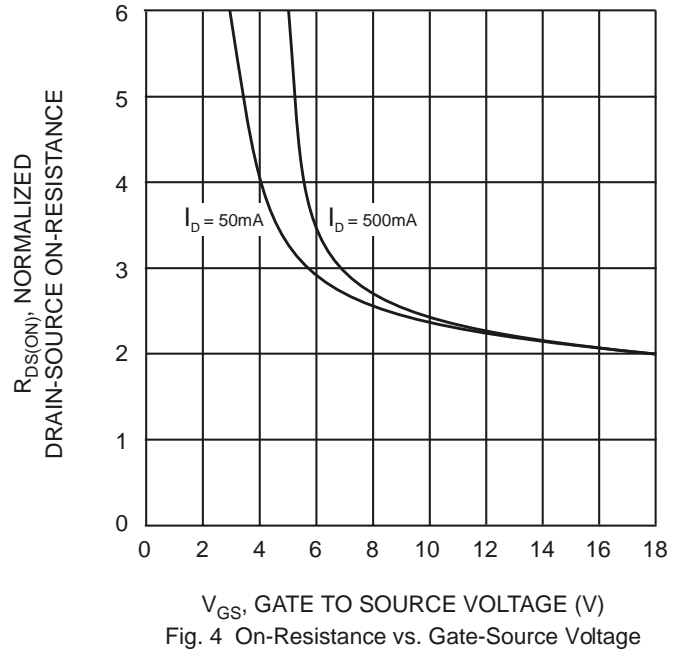


Fig. 4 On-Resistance vs. Gate-Source Voltage

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