



DUAL N-CHANNEL ENHANCEMENT MODE MOSFETS

This space-efficient device contains two electrically-isolated N-Channel enhancement-mode MOSFETs. It comes in a very small SOT-363 (SC70-6L) package. This device is ideal for portable applications where board space is at a premium.

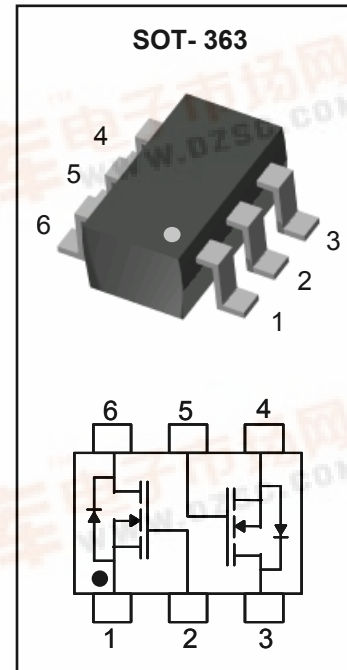
FEATURES

- Dual N-Channel MOSFETS in Ultra-Small SOT-363 Package
- Low On-Resistance
- Low Gate Threshold Voltage
- Fast Switching
- Available in lead-free plating (100% matte tin finish)

APPLICATIONS

- Switching Power Supplies
- Hand-Held Computers, PDAs

MARKING CODE: 702



MAXIMUM RATINGS

$T_J = 25^{\circ}\text{C}$ Unless otherwise noted

Rating	Symbol	Value	Units
Drain-Source Voltage	V_{DSS}	60	V
Drain-Gate Voltage (Note 1)	V_{DGR}	60	V
Gate-Source Voltage	V_{GSS}	20	V
Drain Current	I_D	115	mA
Total Power Dissipation (Note 2)	P_D	200	mW
Operating Junction Temperature Range	T_J	-55 to 150	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-55 to 150	$^{\circ}\text{C}$

Note 1. $R_{GS} < 20\text{K ohms}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Units
Thermal Resistance, Junction to Ambient (Note 2)	R_{thja}	625	$^{\circ}\text{C/W}$

Note 2. FR-5 board 1.0 x 0.75 x 0.062 inch with minimum recommended pad layout





2N7002DW

Electrical Characteristics (Each Device)

$T_J = 25^\circ\text{C}$ Unless otherwise noted

OFF CHARACTERISTICS (Note 3)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D = 10\mu\text{A}$, $V_{GS} = 0\text{V}$	60	80	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 60\text{V}$, $V_{GS} = 0$, $T_J = 25^\circ\text{C}$	-	-	1.0	μA
		$T_J = 125^\circ\text{C}$	-	-	500	
Gate-Body Leakage	I_{GSS}	$V_{GS} = \pm 20\text{V}$, $V_{DS} = 0\text{V}$	-	-	± 10	nA

ON CHARACTERISTICS (Note 3)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\mu\text{A}$	1.0	1.6	2.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 5\text{V}$, $I_D = 0.05\text{A}$	-	1.8	4.5	Ohms
		$V_{GS} = 10\text{V}$, $I_D = 0.5\text{A}$	-	2.0	7.0	
On-State Drain Current	$I_{D(ON)}$	$V_{GS} = 10\text{V}$, $V_{DS} = 7.5\text{V}$	0.5	1.65	-	A
Forward Transconductance	g_{FS}	$V_{DS} = 10\text{V}$, $I_D = 0.2\text{A}$	0.08	-	-	S

DYNAMIC CHARACTERISTICS

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Input Capacitance	C_{iss}	$V_{DS} = 25\text{V}$, $V_{GS} = 0\text{V}$, $f = 1.0\text{MHz}$	-	-	50	pF
Output Capacitance	C_{oss}		-	-	25	pF
Reverse Transfer Capacitance	C_{rss}		-	-	5.0	pF

SWITCHING CHARACTERISTICS

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Turn-On Delay Time	$t_{D(ON)}$	$V_{DD} = 30\text{V}$, $I_D = 0.2\text{A}$, $R_L = 150\text{ohm}$ $R_{GEN} = 25\text{ohm}$, $V_{GEN} = 10\text{V}$	-	-	20	ns
Turn-Off Delay Time	$t_{D(OFF)}$		-	-	20	ns

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



2N7002DW

PANJIT
SEMI
CONDUCTOR

Typical Characteristics Curves (Each Device)

$T_J = 25^\circ\text{C}$ Unless otherwise noted

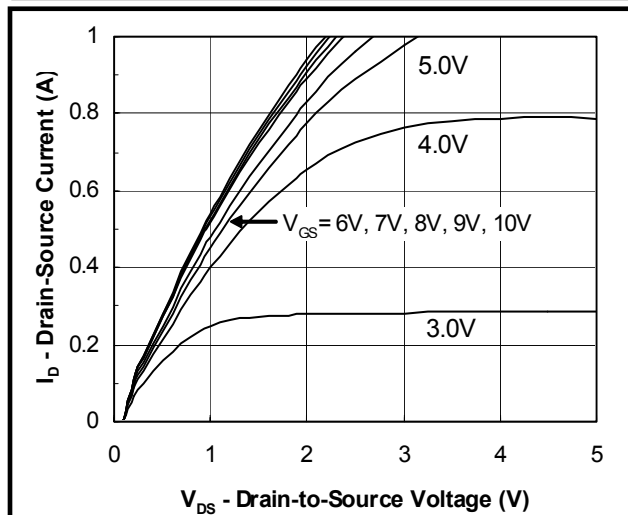


Fig. 1. Output Characteristics

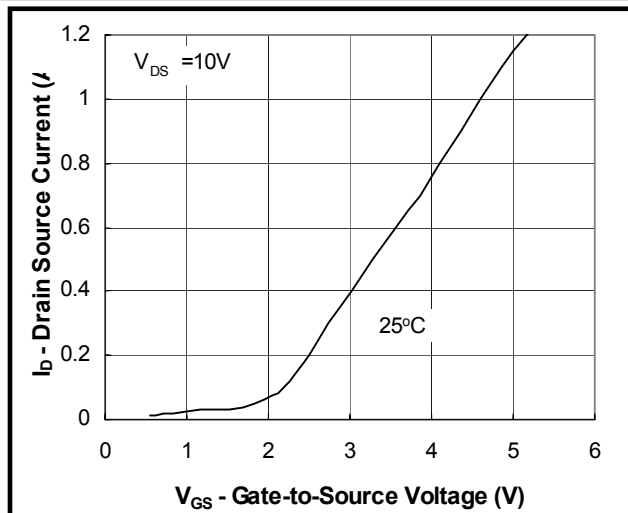


Fig. 2. Transfer Characteristics

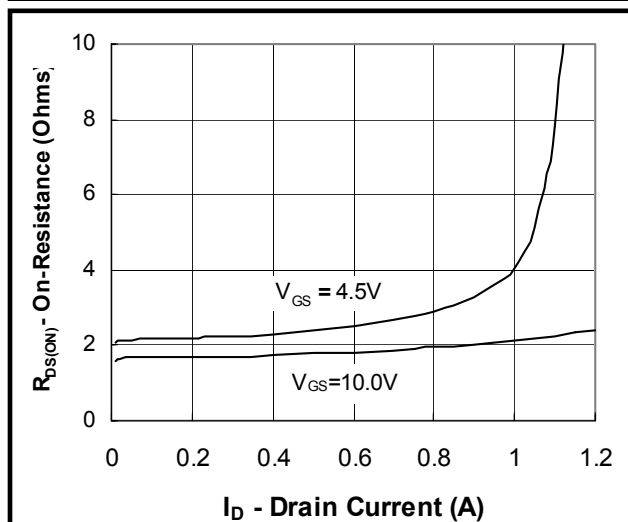


Fig. 3. On-Resistance vs. Drain Current

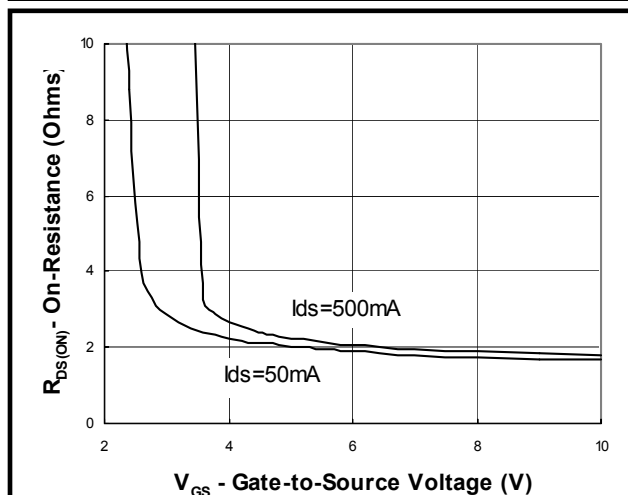


Fig. 4. On-Resistance vs. G-S Voltage

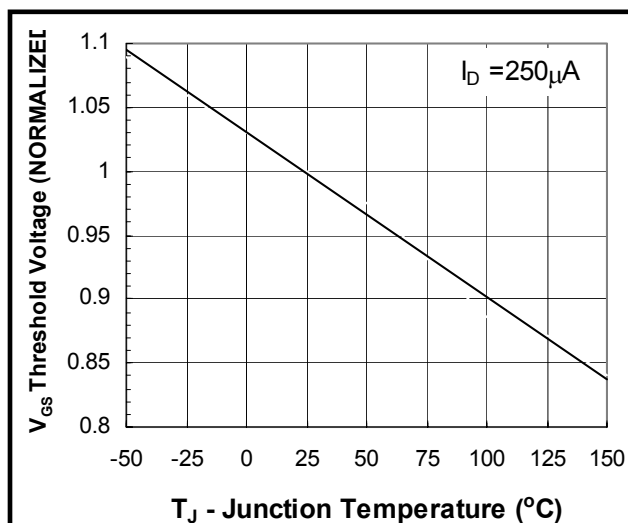


Fig. 5. Threshold Voltage vs. Temperature

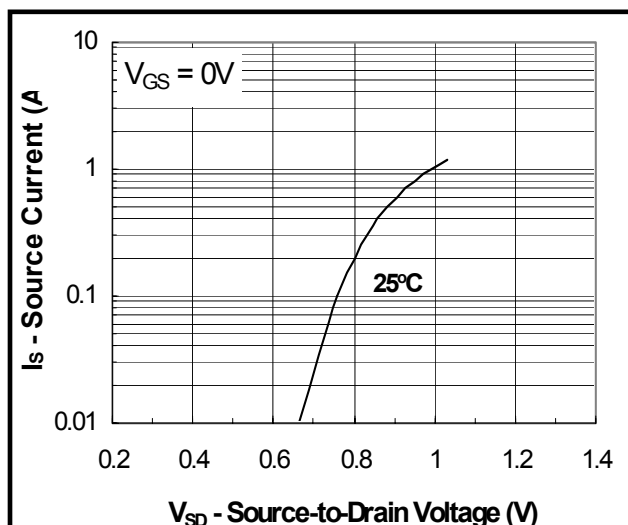
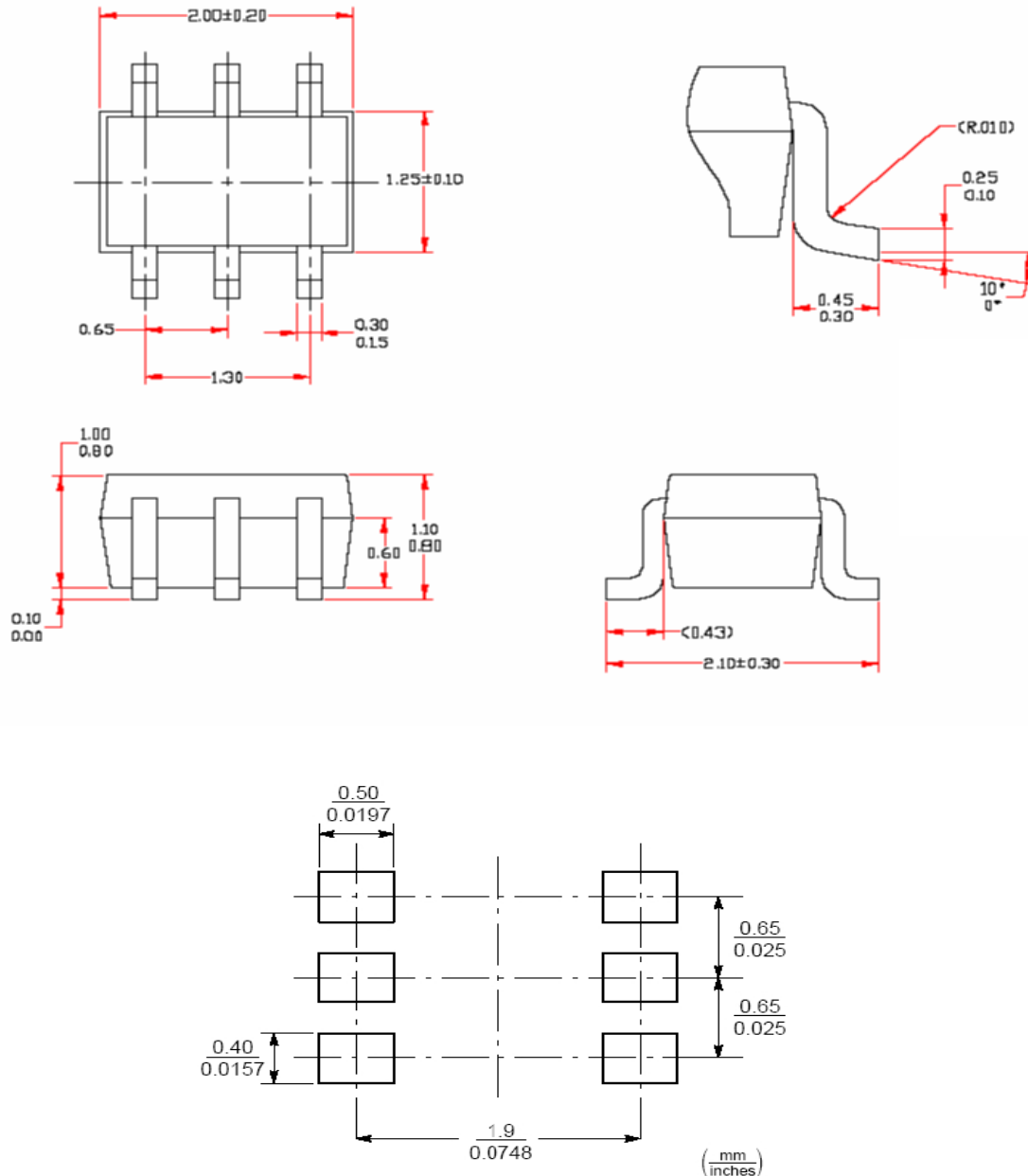


Fig. 6. Source-Drain Diode Forward Voltage



PACKAGE LAYOUT AND SUGGESTED PAD DIMENSIONS



ORDERING INFORMATION

2N7002DW T/R7 - 7 inch reel, 3K units per reel

2N7002DW T/R13 - 13 inch reel, 10K units per reel

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