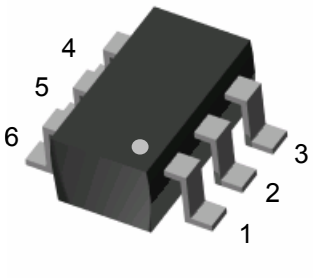
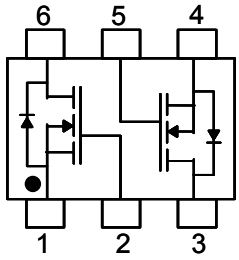
2N7002DW

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.

SOT- 363





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°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	°C
Storage Temperature Range	T_{stg}	-55 to 150	°C

Note 1. R_{GS} < 20K ohms

THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Units
Thermal Resistance, Junction to Ambient (Note 2)	R_{thja}	625	°C/W

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

Electrical Characteristics (Each Device)

T_J = 25°C Unless otherwise noted

OFF CHARACTERISTICS (Note 3)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	BV_{DSS}	I_D= 10µA, V_{GS}= 0V	60	80	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 60V, V_{GS}= 0 T_J=25°C	-	-	1.0	µA
		T_J=125°C	-	-	500	
Gate-Body Leakage	I_{GSS}	V_{GS}= ±20V, V_{DS}= 0V	-	-	±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= 250µA	1.0	1.6	2.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 5V, I_D= 0.05A	-	1.8	4.5	Ohms
		V_{GS}= 10V, I_D= 0.5A	-	2.0	7.0	
On-State Drain Current	$I_{D(ON)}$	V_{GS}= 10V, V_{DS}= 7.5V	0.5	1.65	-	A
Forward Transconductance	g_{FS}	V_{DS}= 10V, I_D= 0.2A	0.08	-	-	S

DYNAMIC CHARACTERISTICS

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Input Capacitance	C_{iss}	V_{DS}= 25V, V_{GS}= 0V, f = 1.0MHz	-	-	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}=30V, I_D=0.2A, R_L=150ohm R_{GEN}= 25ohm, V_{GEN}= 10V	-	-	20	ns
Turn-Off Delay Time	$t_{D(OFF)}$		-	-	20	ns

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

Typical Characteristics Curves (Each Device)

T_J = 25°C Unless otherwise noted

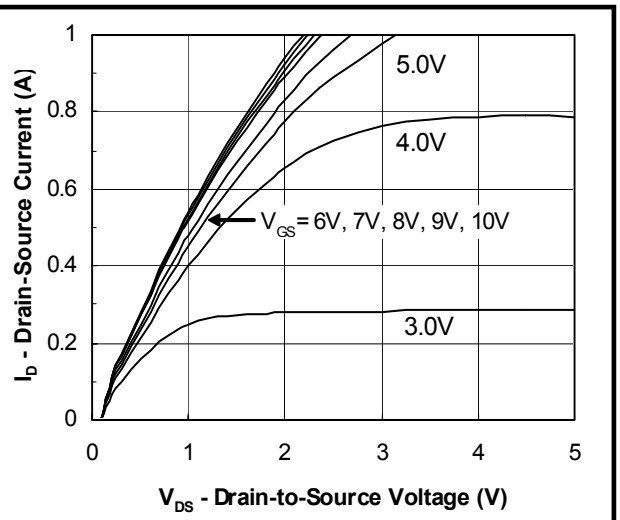


Fig. 1. Output Characteristics

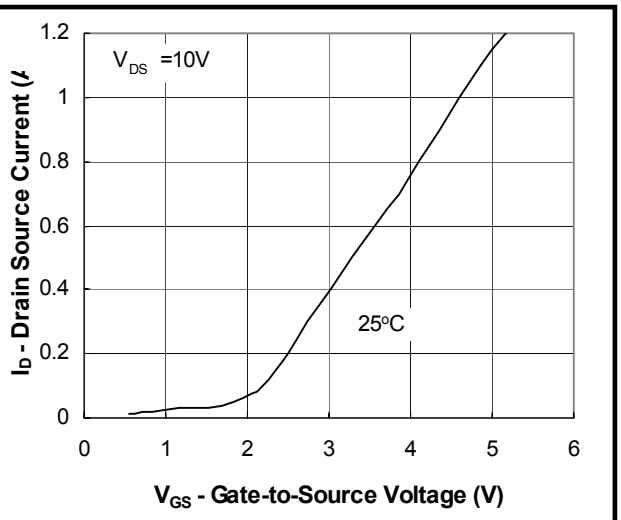


Fig. 2. Transfer Characteristics

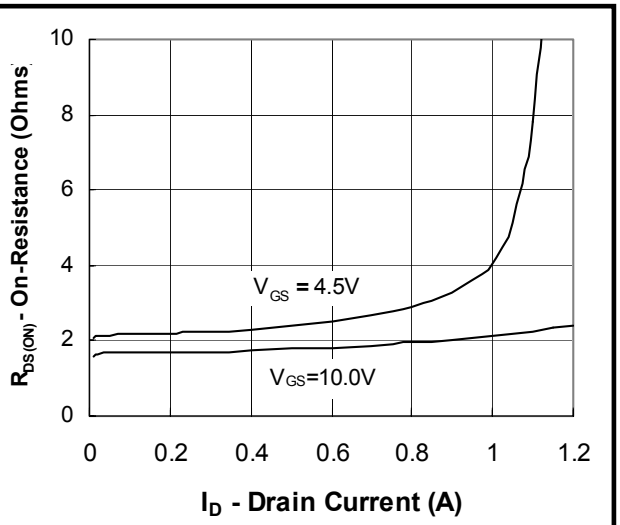


Fig. 3. On-Resistance vs. Drain Current

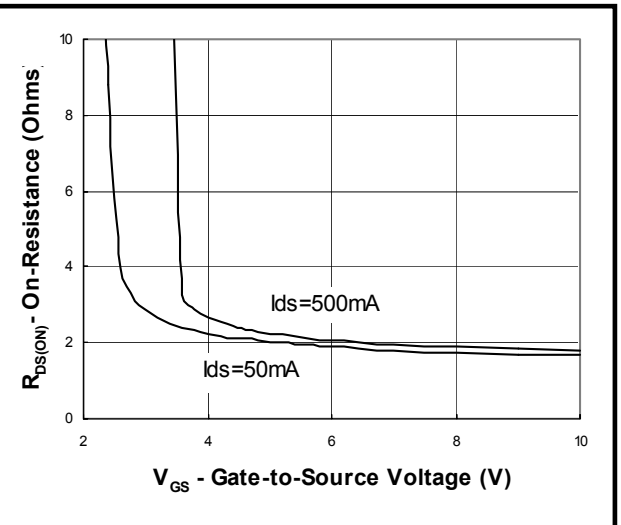


Fig. 4. On-Resistance vs. G-S Voltage

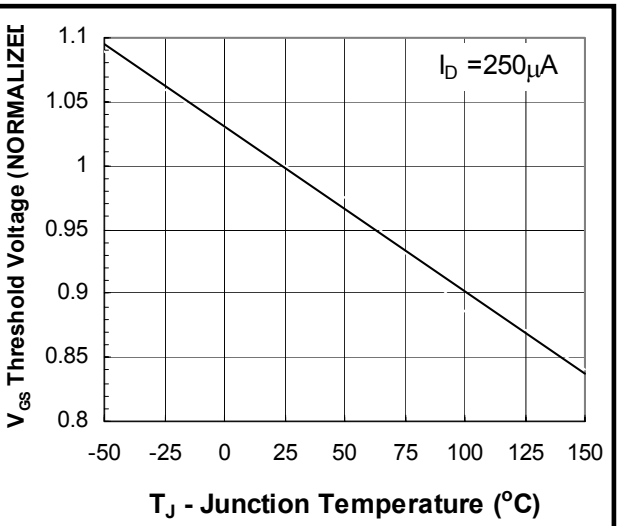


Fig. 5. Threshold Voltage vs. Temperature

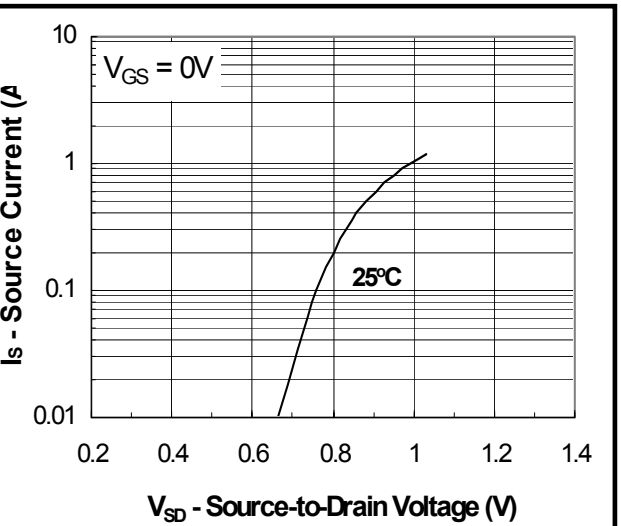
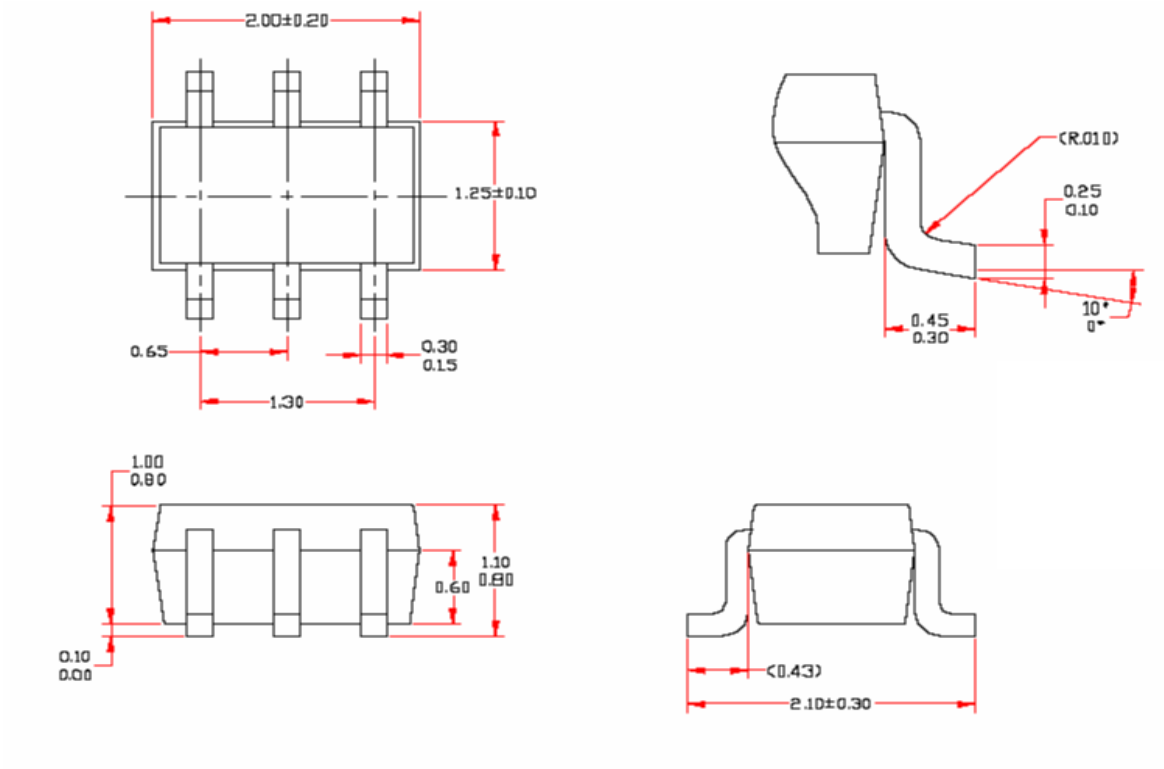
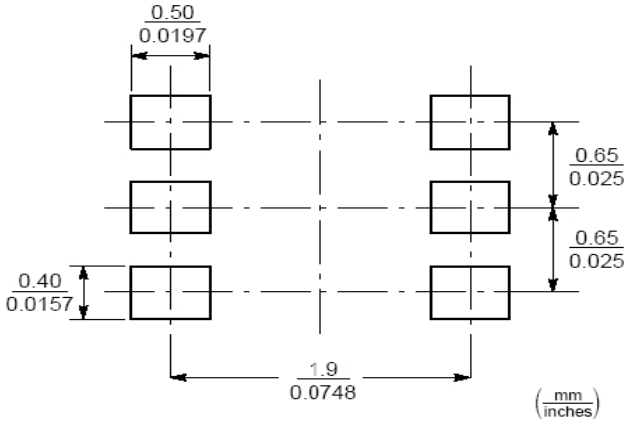


Fig. 6. Sourse-Drain Diode Forward Voltage

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