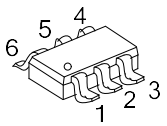
2N7002DW-S

Power MOSFET

0.3A, 60V N-CHANNEL POWER MOSFET



SOT-363

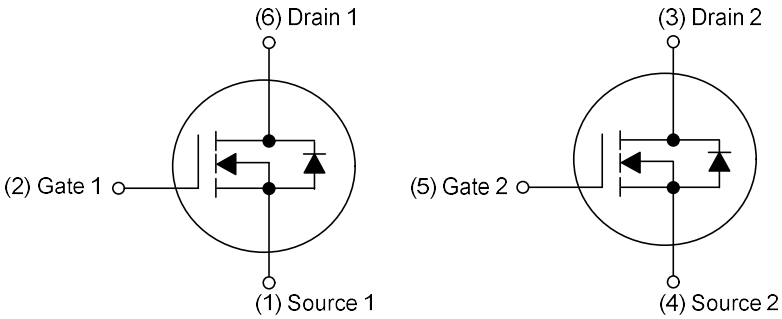
■ DESCRIPTION

The UTC **2N7002DW-S** uses advanced technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

■ FEATURES

* High Density Cell Design for Low $R_{DS(ON)}$
* Voltage Controlled Small Signal Switch
* Rugged and Reliable
* High Saturation Current Capability

■ SYMBOL



■ ORDERING INFORMATION

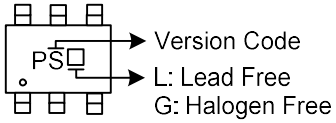
Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
2N7002DWL-S-AL6-R	2N7002DWG-S-AL6-R	SOT-363	S1	G1	D2	S2	G2	D1	Tape Reel

Note: Pin Assignment: G: Gate D: Drain S: Source

2N7002DWG-S-AL6-R

(1)Packing Type	(1) R: Tape Reel
(2)Package Type	(2) AL6: SOT-363
(3)Version Code	(3) Version S
(4)Green Package	(4) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



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■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified.)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	60	V
Gate Source Voltage	Continuous	V_{GSS}	±20	V
Drain Current	Continuous	I_D	300	mA
	Pulsed		800	mA
Peak Diode Recovery dv/dt (Note 3)		dv/dt	3.9	V/ns
Power Dissipation		P_D	200	mW
Junction Temperature		T_J	+ 150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°C

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. I_{SD} ≤ 0.3A, di/dt ≤ 200A/μs, V_{DD} ≤ BV_{DSS}, Starting T_J = 25°C.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	625	°C/W
Junction to Case	θ_{JC}	215	°C/W

Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=10μA	60			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			1	μA
Gate-Source Leakage Current	I_{GSSF}	V_{GS}=20V, V_{DS}=0V			100	nA
	I_{GSSR}	V_{GS}=-20V, V_{DS}=0V			-100	nA
ON CHARACTERISTICS (Note)						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS}, I_D=250μA	1.0		2.5	V
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	V_{GS}=10V, I_D=300mA			2.3	Ω
		V_{GS}=4.5V, I_D=50mA			2.8	Ω
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	V_{DS}=25V, V_{GS}=0V, f=1.0MHz		16	50	pF
Output Capacitance	C_{OSS}			7	25	pF
Reverse Transfer Capacitance	C_{RSS}			3	5	pF
Turn-on Delay Time (Note 1)	$t_{D(ON)}$	V_{DD}=30V, R_L=150Ω, I_D=200mA,		3.5	20	nS
Turn-off Delay Time	$t_{D(OFF)}$	V_{GS}=10V, R_G=10Ω (Note 1, 2)		11	20	nS
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Maximum Continuous Drain-Source Diode Forward Current	I_S				300	mA
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				0.8	A
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=300mA (Note)		0.88	1.5	V
Reverse Recovery Time (Note 1)	t_{rr}	I_S=0.3A, V_{GS}=0V,		45		nS
Reverse Recovery Charge	Q_{rr}	dI_F/dt =100A/μs		7		nC

Notes: 1.Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%.
2. Essentially independent of operating ambient temperature.

■ TEST CIRCUIT AND WAVEFORM

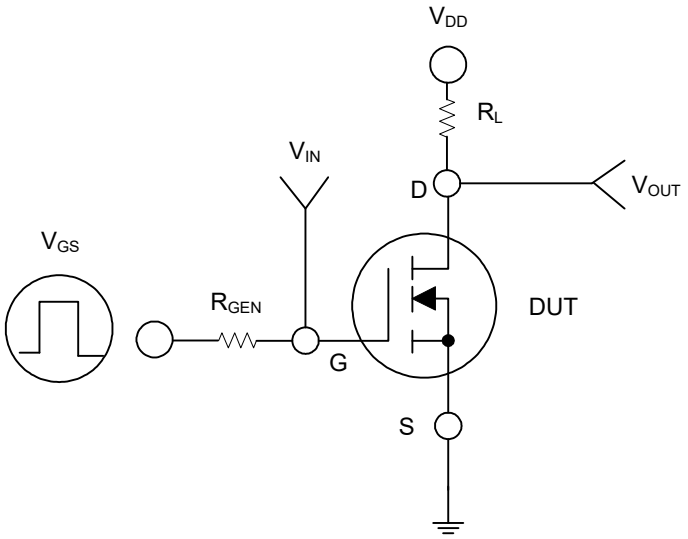


Fig. 1

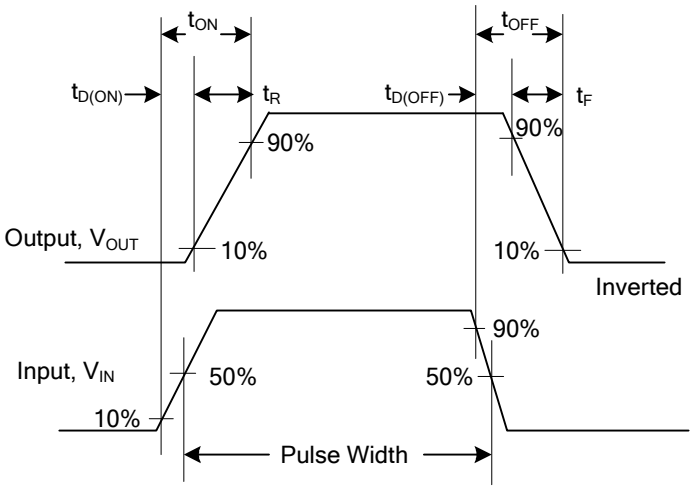
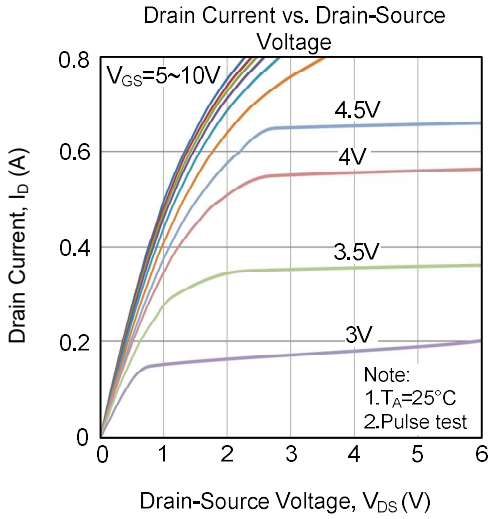
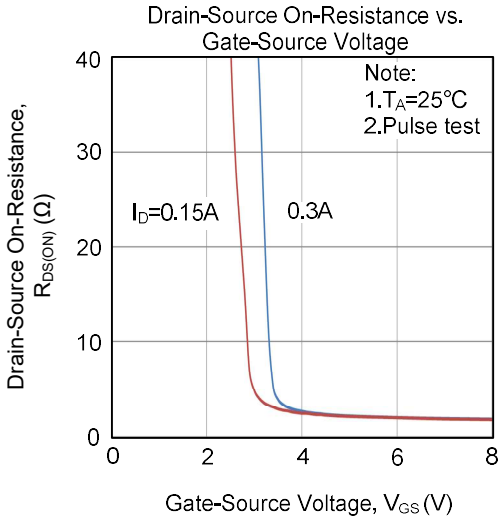
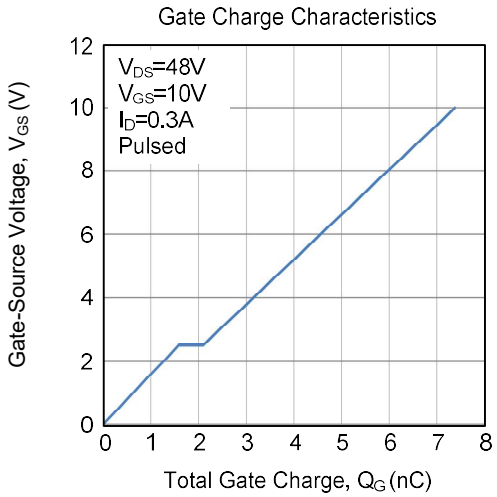


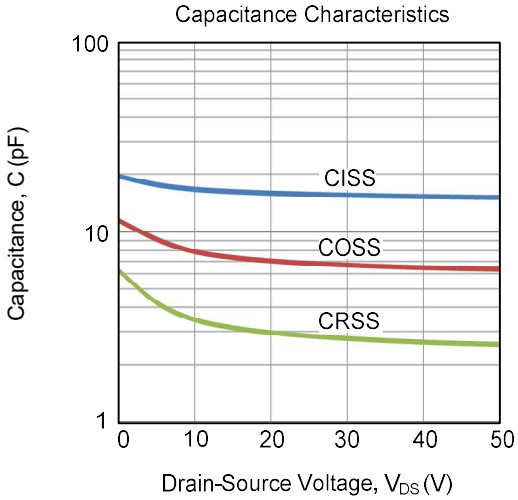
Fig. 2 Switching Waveforms

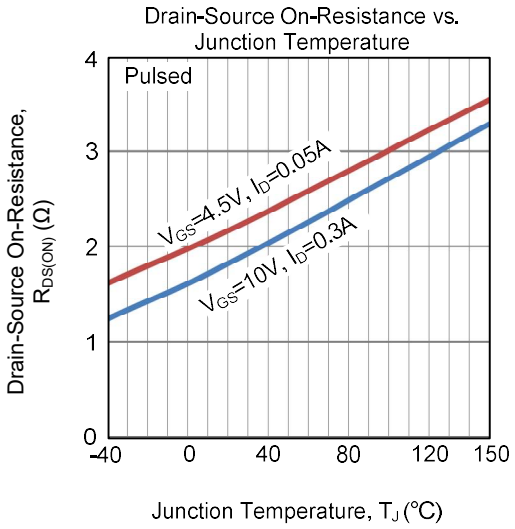
■ TYPICAL CHARACTERISTICS

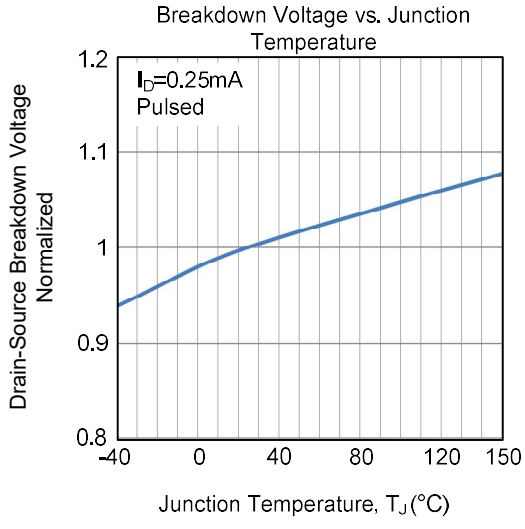




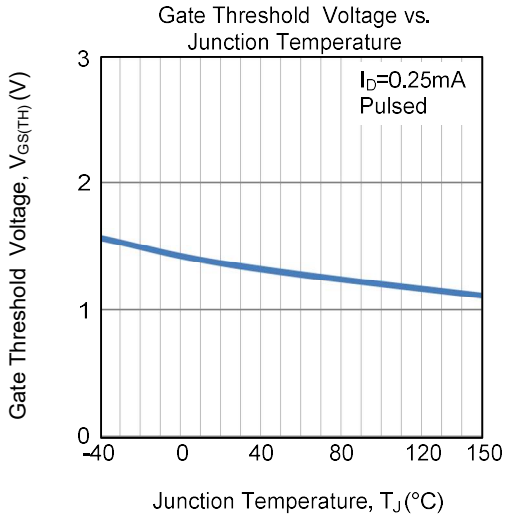


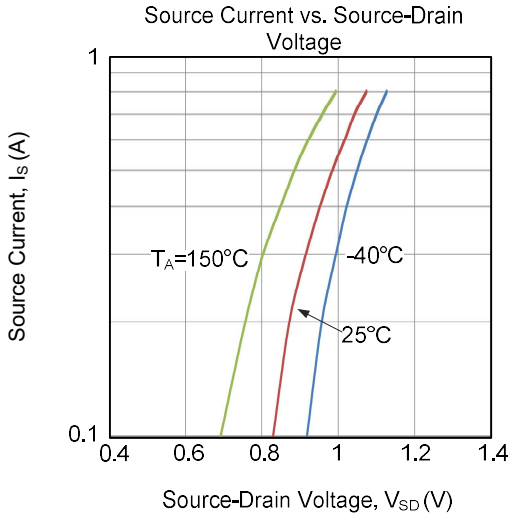


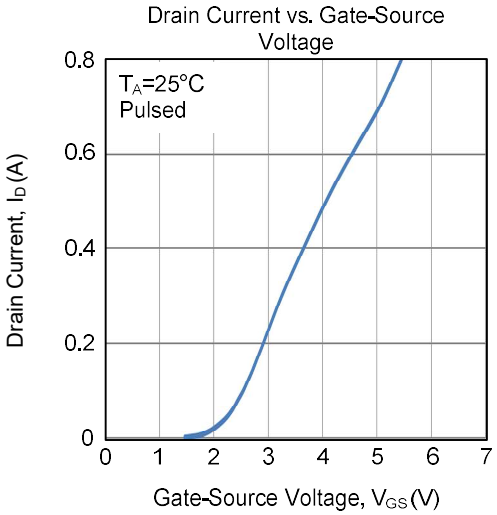


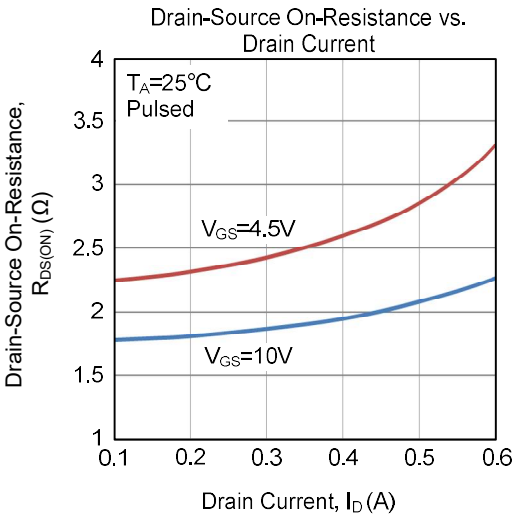


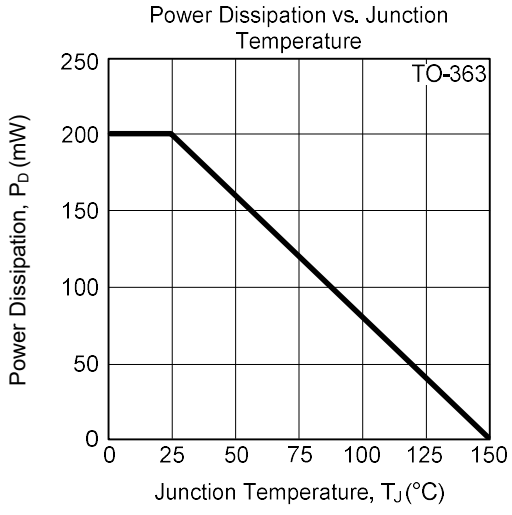
■ TYPICAL CHARACTERISTICS (Cont.)

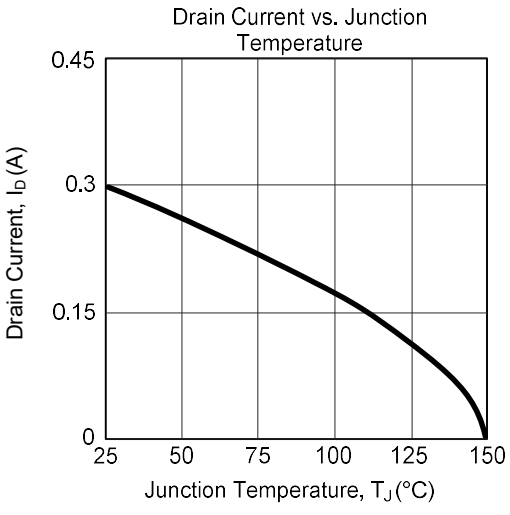




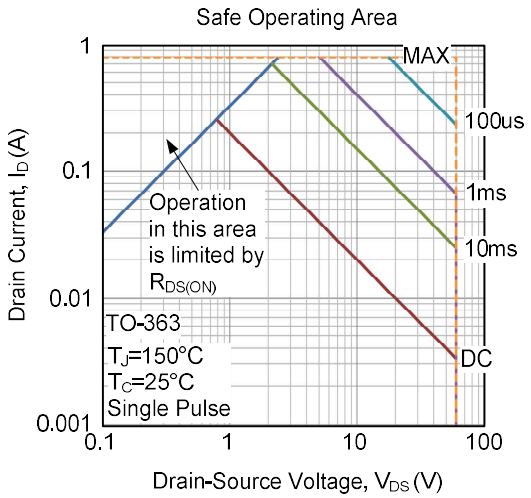








■ TYPICAL CHARACTERISTICS (Cont.)



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