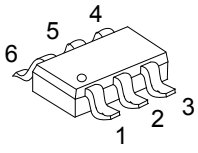
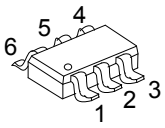
2N7002ZDW

Power MOSFET

300mA, 60V DUAL N-CHANNEL ENHANCEMENT MODE POWER MOSFET



SOT-26



SOT-363

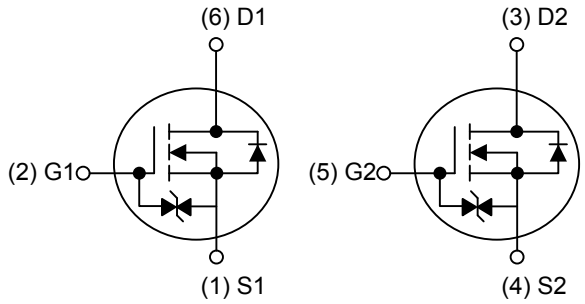
■ DESCRIPTION

The UTC **2N7002ZDW** uses advanced technology to provide excellent $R_{DS(ON)}$, low gate charge and low gate voltages during operation. This device is suitable for use as a load switch or in PWM applications.

■ FEATURES

* Low Reverse Transfer Capacitance
* ESD Protected
* Fast Switching Capability
* Avalanche Energy Specified
* Improved dv/dt Capability, High Ruggedness

■ SYMBOL



■ ORDERING INFORMATION

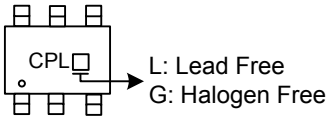
Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
2N7002ZDWL-AG6-R	2N7002ZDWG-AG6-R	SOT-26	S1	G1	D2	S2	G2	D1	Tape Reel
2N7002ZDWL-AL6-R	2N7002ZDWG-AL6-R	SOT-363	S1	G1	D2	S2	G2	D1	Tape Reel

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

2N7002ZDWG-AG6-R

(1)Packing Type	(1) R: Tape Reel
(2)Package Type	(2) AG6: SO-26, AL6: SOT-363
(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	Continuous	I_D	300	mA
	Pulse(Note 2)		800	
Power Dissipation	SOT-26	P_D	300	mW
	SOT-363		200	mW
Derating above T_A=25°C	SOT-26		2.4	mW/°C
	SOT-363		1.6	mW/°C
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°C

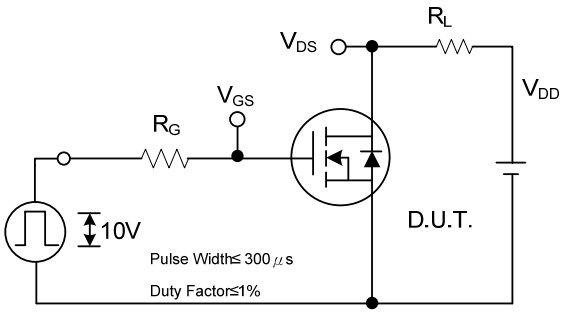
Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

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

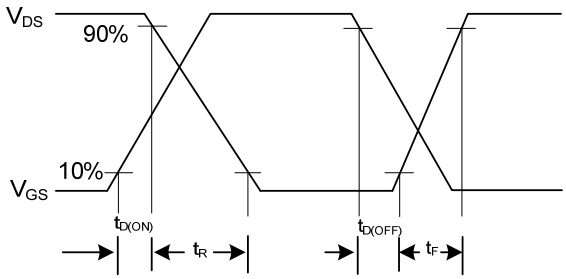
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=10μA	60			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			1.0	μA
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±10	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	1.0		2.5	V
Static Drain-Source On-Resistance (Note)	$R_{DS(ON)}$	V_{GS}=10V, I_D=300mA			4.0	Ω
		V_{GS}=4.5V, I_D=50mA			6.0	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS}=25V, V_{GS}=0V, f=1.0MHz		22	50	pF
Output Capacitance	C_{OSS}			9	25	pF
Reverse Transfer Capacitance	C_{RSS}			4	5.0	pF
SWITCHING PARAMETERS						
Turn-ON Delay Time	$t_{D(ON)}$	I_D=0.2 A, V_{DD}=30V, V_{GS}=10V, R_L=150Ω, R_G=10Ω		1.3	20	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			4.2	30	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

Notes: 1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch. Minimum land pad size.
2. Pulse width≦300μs, Duty cycle≦1%

■ TEST CIRCUITS AND WAVEFORMS

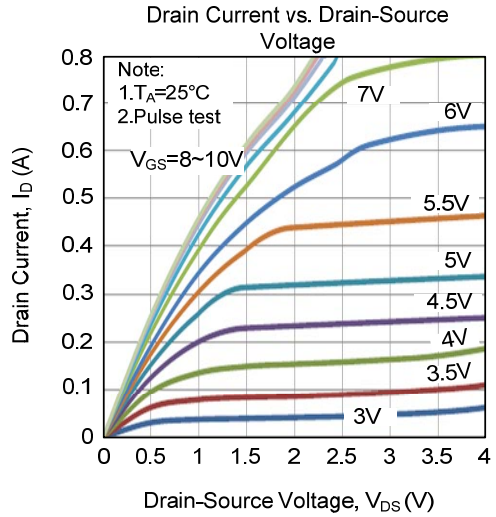


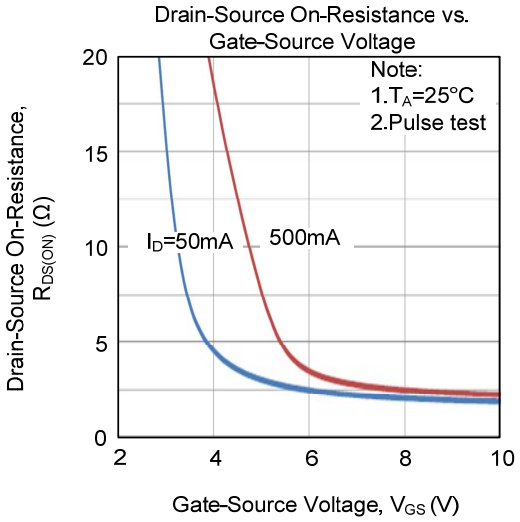
Switching Test Circuit

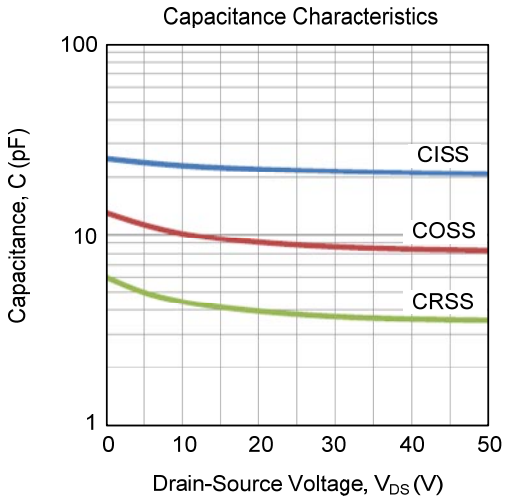


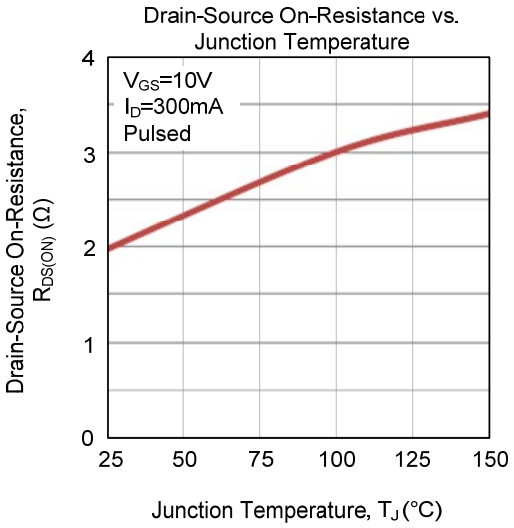
Switching Waveforms

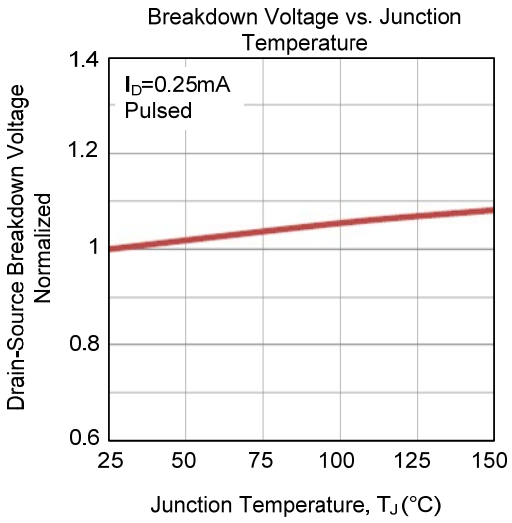
■ TYPICAL CHARACTERISTICS

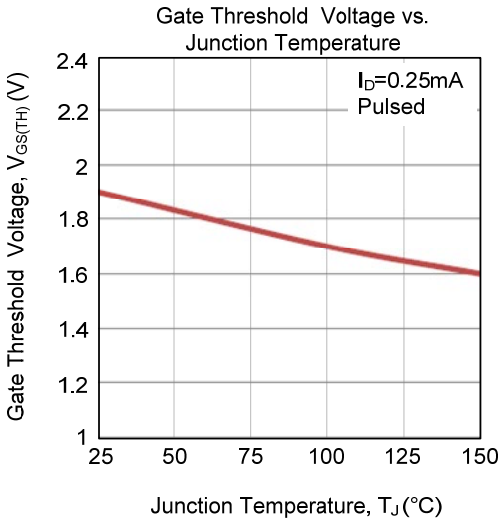












■ TYPICAL CHARACTERISTICS (Cont.)