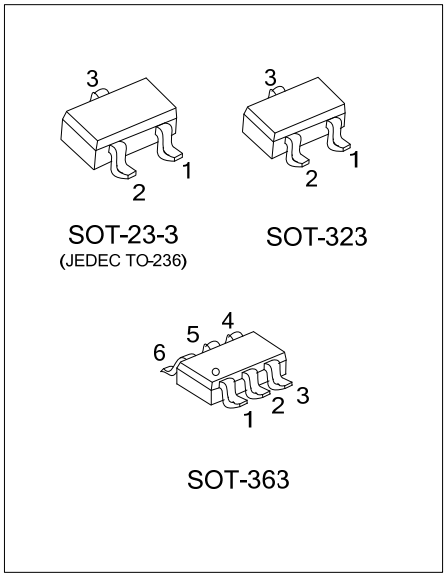
2N7002Z **Preliminary** ***Power MOSFET***

INTERFACE AND SWITCHING (300mA, 60Volts)



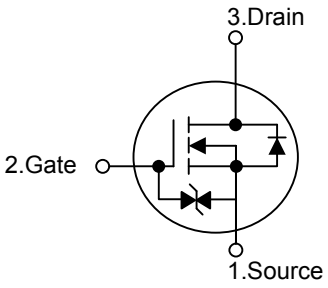
■ DESCRIPTION

The UTC **2N7002Z** 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

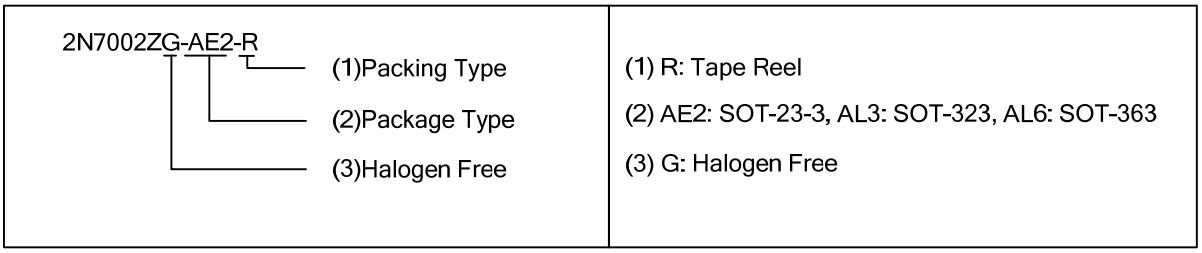
* $R_{DS(ON)}$ <7.5Ω
* Low Reverse Transfer Capacitance (C_{RSS} = typical 3.0 pF)
* ESD Protected
* Fast Switching Capability
* Avalanche Energy Specified
* Improved dv/dt Capability, High Ruggedness

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number	Package	Pin Assignment						Packing
		1	2	3	4	5	6	
2N7002ZG-AE2-R	SOT-23-3	S	G	D	-	-	-	Tape Reel
2N7002ZG-AL3-R	SOT-323	S	G	D	-	-	-	Tape Reel
2N7002ZG-AL6-R	SOT-363	S1	G1	D2	S2	G2	D1	Tape Reel



■ MARKING

■ ABSOLUTE MAXIMUM RATINGS (T_a = 25°C)

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		P_D	225	mW
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°C

Note: 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. Pulse width≦10μs, Duty cycle≦1%

■ ELECTRICAL CHARACTERISTICS (T_a=25°C)

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}=10V, I_D=1mA	1.0	1.85	2.5	V
Static Drain-Source On-Resistance (Note)	$R_{DS(ON)}$	V_{GS}=10V, I_D=0.5A			7.5	Ω
		V_{GS}=5V, I_D=0.05A			7.5	
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=0.2A	80			mS
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS}=25V, V_{GS}=0V, f=1.0MHz		25	50	pF
Output Capacitance	C_{OSS}			10	25	pF
Reverse Transfer Capacitance	C_{RSS}			3.0	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		12	20	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			20	30	ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, Is=115mA (Note)		0.88	1.5	V
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				0.8	A
Maximum Continuous Drain-Source Diode Forward Current	Is				115	mA

Note: Pulse width≦300μs, Duty cycle≦1%

■ TEST CIRCUITS AND WAVEFORMS

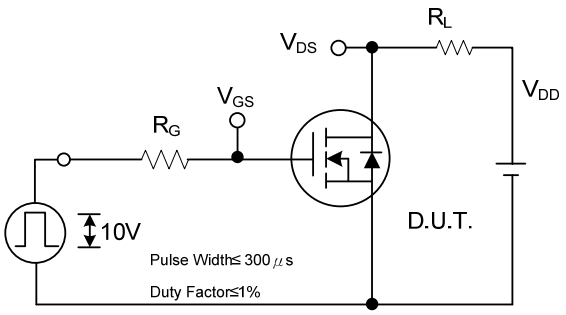


Fig. 2A Switching Test Circuit

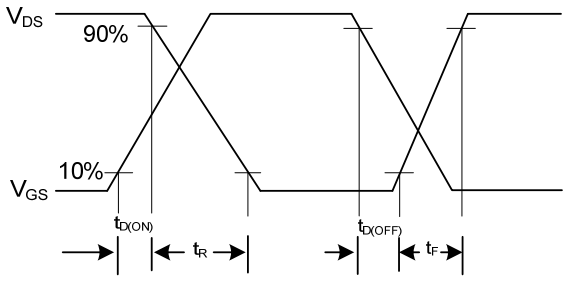


Fig. 2B Switching Waveforms