



UT02NN03Z

Preliminary

Power MOSFET

200mA, 30V DUAL N-CHANNEL ENHANCEMENT MODE POWER MOSFET

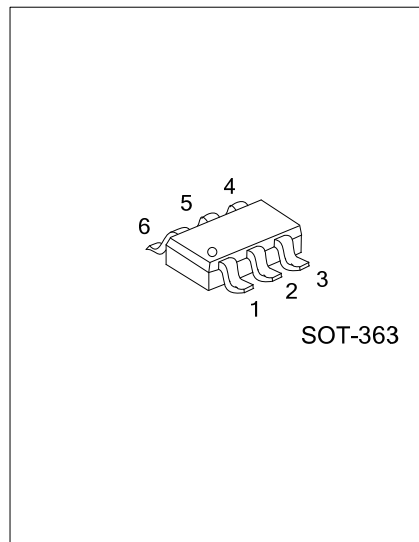
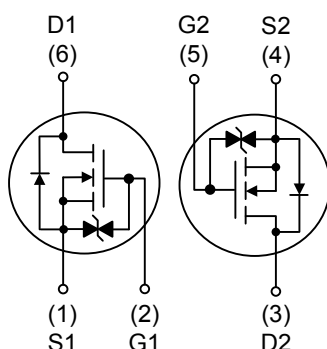
DESCRIPTION

The **UT02NN03Z** uses UTC advanced technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device's general purpose is for switching device applications.

FEATURES

- * $R_{DS(ON)} \leq 1.8 \Omega @ V_{GS}=4.5V, I_D=80mA$
 $R_{DS(ON)} \leq 2.0 \Omega @ V_{GS}=4.0V, I_D=80mA$
 $R_{DS(ON)} \leq 3.0 \Omega @ V_{GS}=2.5V, I_D=40mA$
- * Fast switching capability
- * Enhanced ESD capability

SYMBOL



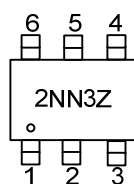
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
UT02NN03ZL-AL6-R	UT02NN03ZG-AL6-R	SOT-363	S1	G1	D2	S2	G2	D1	Tape Reel

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

UT02NN03ZG-AL6-R		(1)Packing Type	(1) R: Tape Reel
		(2)Package Type	(2) AL6: SOT-363
		(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	± 10	V
Drain Current	DC	0.2	A
	Pulse(Note 2)	0.6	A
Power Dissipation	P_D	200	mW
Operating Temperature	T_{OPR}	$-40 \sim +85$	$^\circ\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +150$	$^\circ\text{C}$

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. Repetitive Rating: Pulse width limited by maximum junction temperature.

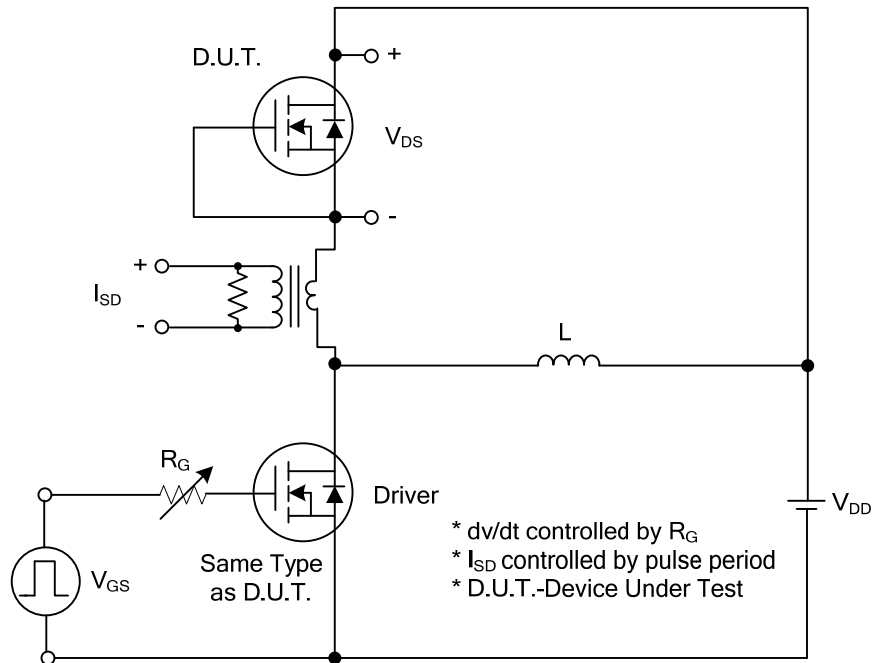
3. Pulse width $\leq 10\mu\text{s}$, Duty cycle $\leq 1\%$.

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

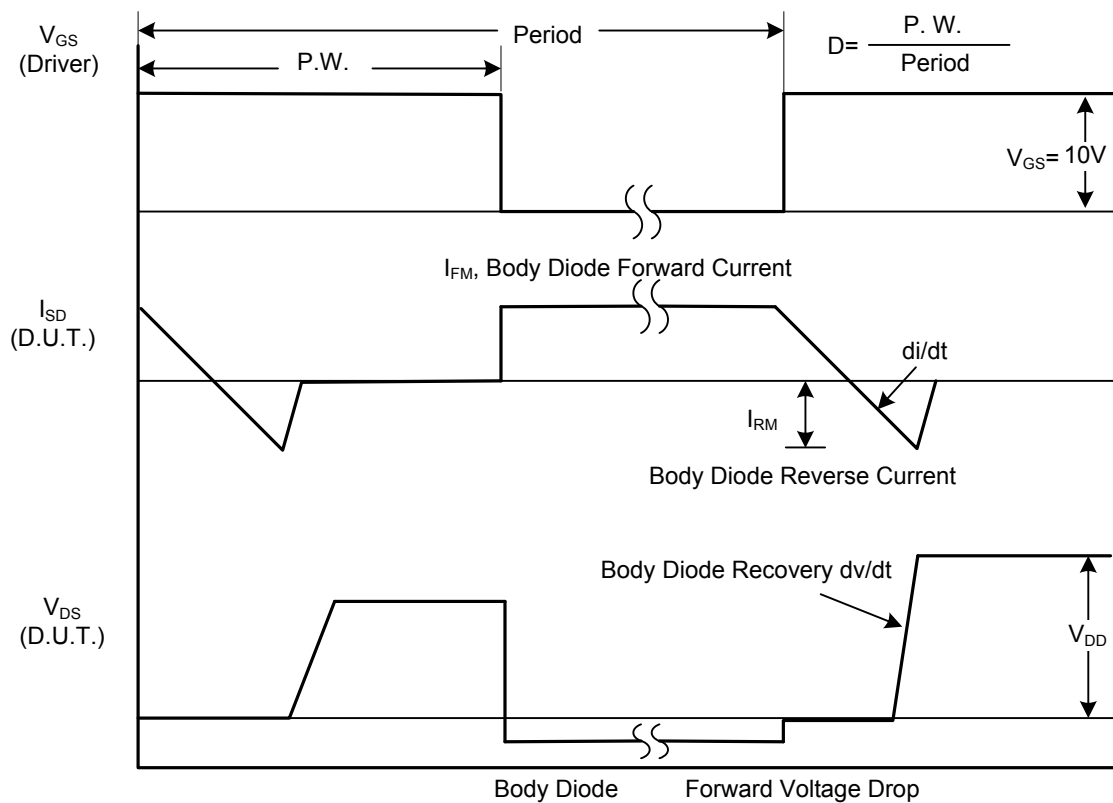
■ ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=1mA$	30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 8V, V_{DS}=0V$			± 10	μA
ON CHARACTERISTICS						
Cutoff Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=10V, I_D=100\mu A$	0.4		1.3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=80mA$		1.1	1.8	Ω
		$V_{GS}=4.0V, I_D=80mA$		1.4	2.0	Ω
		$V_{GS}=2.5V, I_D=40mA$		2.1	3.0	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{DS}=10V, V_{GS}=0V, f=1.0MHz$		23		pF
Output Capacitance	C_{OSS}			11		pF
Reverse Transfer Capacitance	C_{RSS}			5.4		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	$V_{DS}=24V, V_{GS}=4.5V, I_D=200mA$		4		nC
Gate Source Charge	Q_{GS}			1		nC
Gate Drain Charge	Q_{GD}			0.4		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DS}=15V, I_D=200mA, R_G=3.3\Omega$		1.2		ns
Turn-ON Rise Time	t_R			16		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			10		ns
Turn-OFF Fall-Time	t_F			20		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V_{SD}	$I_S=200mA, V_{GS}=0V$		0.87	1.2	V

TEST CIRCUITS AND WAVEFORMS

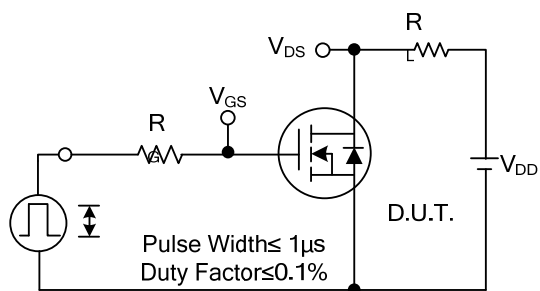


Peak Diode Recovery dv/dt Test Circuit

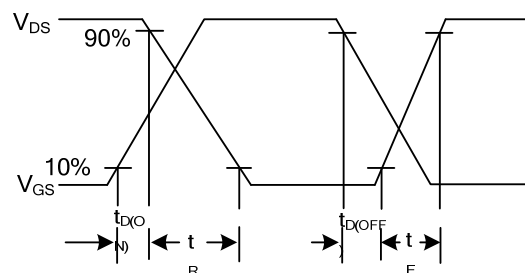


Peak Diode Recovery dv/dt Waveforms

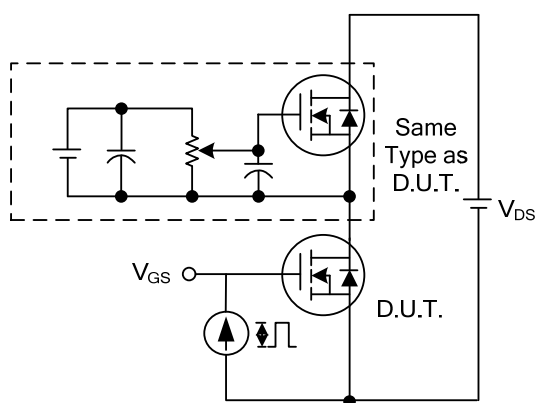
■ TEST CIRCUITS AND WAVEFORMS



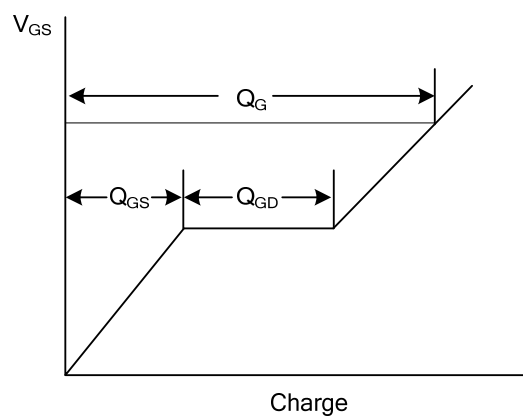
Switching Test Circuit



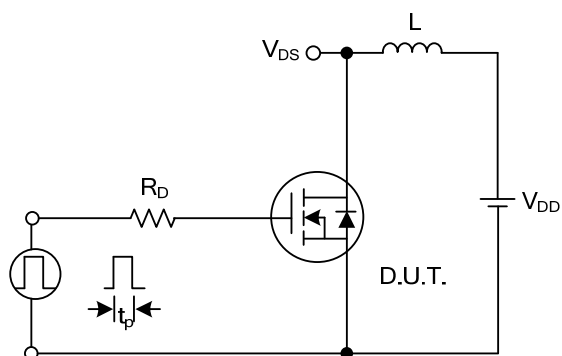
Switching Waveforms



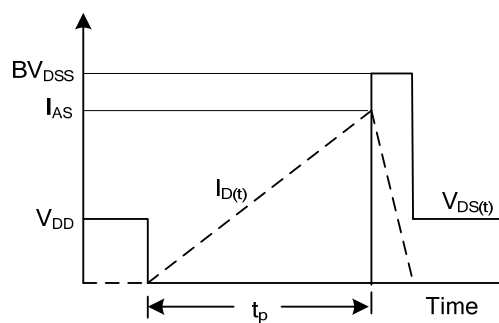
Gate Charge Test Circuit



Gate Charge Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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