

**UT3N06-Q****Power MOSFET****3.0A, 60V N-CHANNEL
POWER MOSFET****DESCRIPTION**

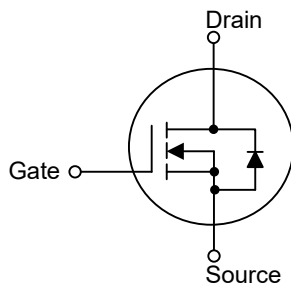
The UTC **UT3N06** is an N-channel power MOSFET providing very low on-resistance. It has high efficiency and perfect cost-effectiveness. It can be generally applied in the commercial and industrial fields.

FEATURES

* $R_{DS(ON)} \leq 110 \text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=3.0\text{A}$

$R_{DS(ON)} \leq 150 \text{ m}\Omega$ @ $V_{GS}=4.5\text{V}$, $I_D=2.0\text{A}$

* Simple drive requirement

SYMBOL**ORDERING INFORMATION**

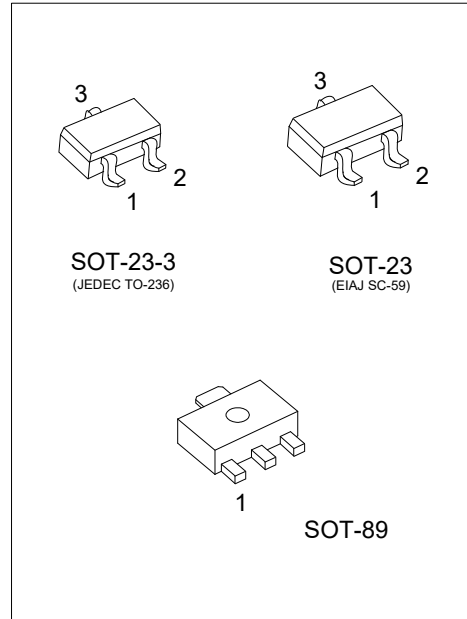
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT3N06L-AB3-R	UT3N06G-AB3-R	SOT-89	G	D	S	Tape Reel
UT3N06L-AE2-R	UT3N06G-AE2-R	SOT-23-3	G	S	D	Tape Reel
UT3N06L-AE3-R	UT3N06G-AE3-R	SOT-23	G	S	D	Tape Reel

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

		(1) R: Tape Reel (2) AB3: SOT-89, AE2: SOT-23-3, AE3: SOT-23 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING

SOT-89	SOT-23-3 / SOT-23
Lot Code Date Code UT3N06 L: Lead Free G: Halogen Free	Q3N06



■ ABSOLUTE MAXIMUM RATINGS (T_C=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	3	A
	Pulsed (Note 2)	I _{DM}	6	A
Peak Diode Recovery dv/dt (Note 3)		dv/dt	2.9	V/ns
Power Dissipation	SOT-89	P _D	1	W
	SOT-23-3		0.3	W
	SOT-23		0.5	W
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. Repetitive Rating: Pulse width limited by maximum junction temperature.

3. I_{SD} ≤ 3.0A, di/dt ≤ 200A/μs, V_{DD} ≤ BV_{DSS}, Starting T_J = 25°C

■ THERMAL DATA

PARAMETER		SYMBOL	RATING	UNIT
Junction to Ambient	SOT-89	θ _{JA}	125	°C/W
	SOT-23-3		416	°C/W
	SOT-23		250	°C/W

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

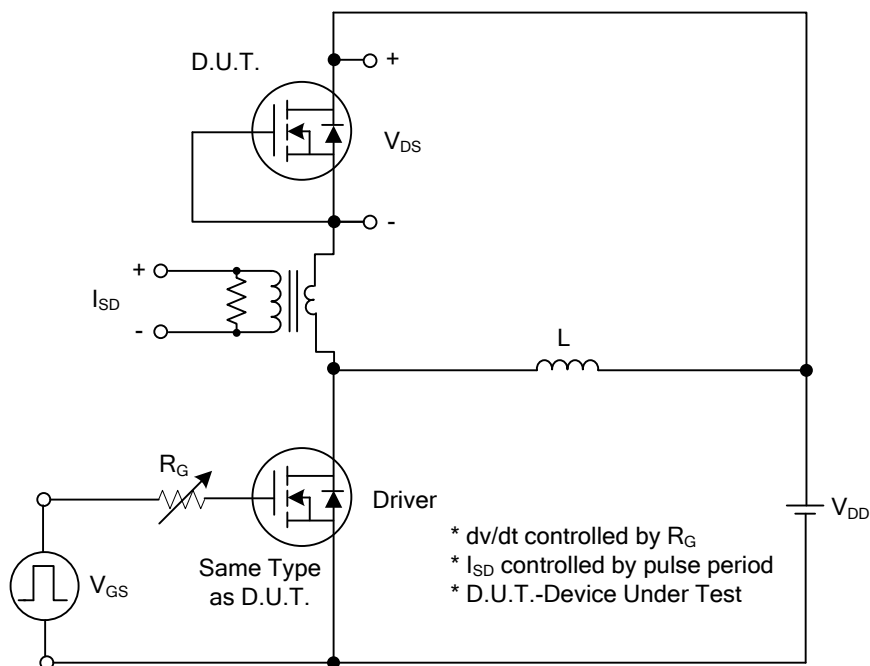
■ ELECTRICAL CHARACTERISTICS (T_c=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV _{DSS}	I _D =250μA, V _{GS} =0V	60			V
Drain-Source Leakage Current		I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
Gate- Source Leakage Current	Forward	I _{GSS}	V _{GS} =+20V, V _{DS} =0V			+100	nA
	Reverse		V _{GS} =-20V, V _{DS} =0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250μA	1.0		3.0	V
Static Drain-Source On-State Resistance		R _{DS(ON)}	V _{GS} =10V, I _D =3.0A			110	mΩ
			V _{GS} =4.5V, I _D =2.0A			150	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C _{ISS}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz		228		pF
Output Capacitance		C _{OSS}			28		pF
Reverse Transfer Capacitance		C _{RSS}			21		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q _G	V _{DS} =48V, V _{GS} =10V, I _D =3.0A (Note1, 2)		13		nC
Gate to Source Charge		Q _{GS}			3		nC
Gate to Drain Charge		Q _{GD}			2.1		nC
Turn-ON Delay Time		t _{D(ON)}	V _{DS} =30V, V _{GS} =10V, I _D =3.0A, R _G =25Ω (Note1, 2)		4		ns
Rise Time		t _R			18		ns
Turn-OFF Delay Time		t _{D(OFF)}			16		ns
Fall-Time		t _F			12		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Body-Diode Continuous Current		I _S				3	A
Maximum Body-Diode Pulsed Current		I _{SM}				6	A
Drain-Source Diode Forward Voltage		V _{SD}	I _S =3.0A, V _{GS} =0V			1.4	V
Body Diode Reverse Recovery Time		t _{rr}	I _S =3.0A, V _{GS} =0V,		22		ns
Body Diode Reverse Recovery Charge		Q _{rr}	dI _F /dt=100A/μs (Note 1)		12		nC

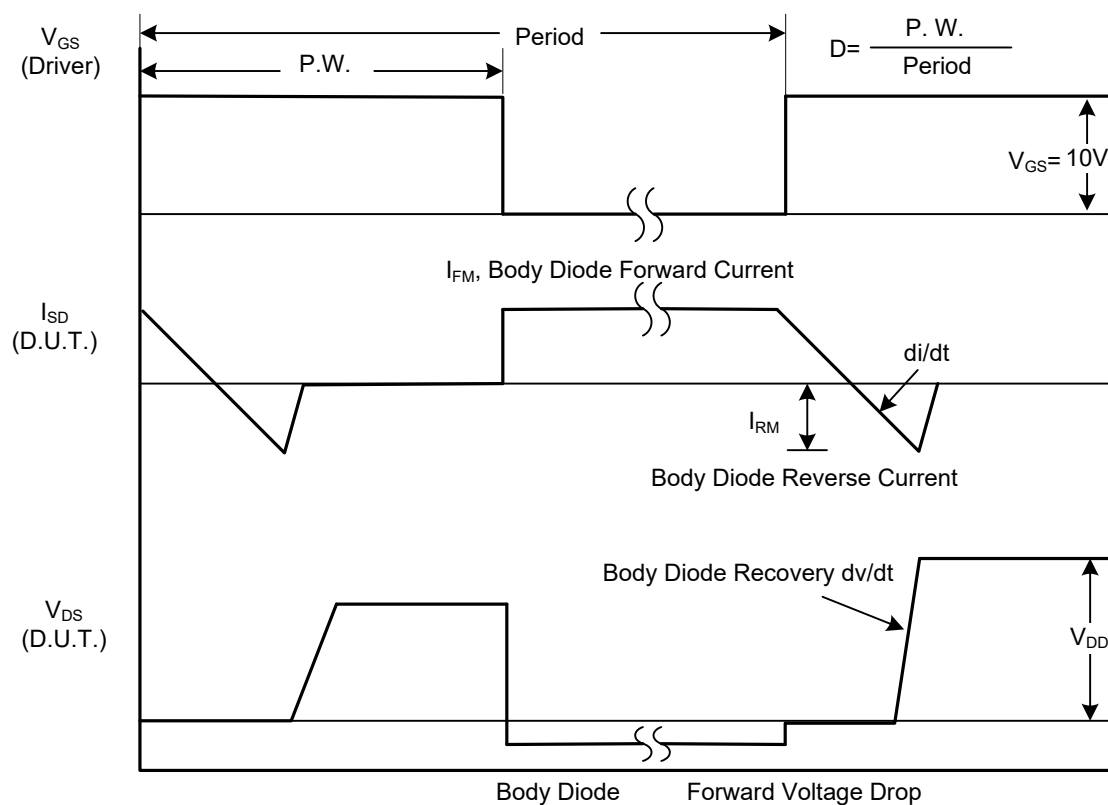
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating ambient temperature.

■ TEST CIRCUITS AND WAVEFORMS



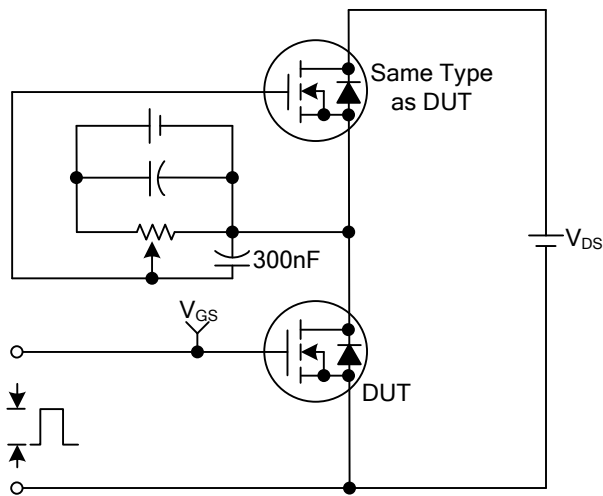
Peak Diode Recovery dv/dt Test Circuit



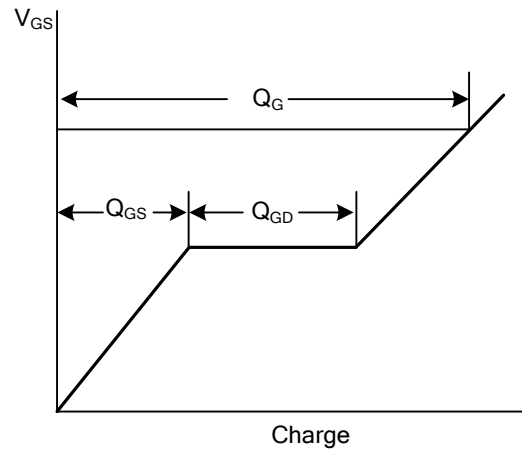
Peak Diode Recovery dv/dt Waveforms

■ TEST CIRCUITS AND WAVEFORMS

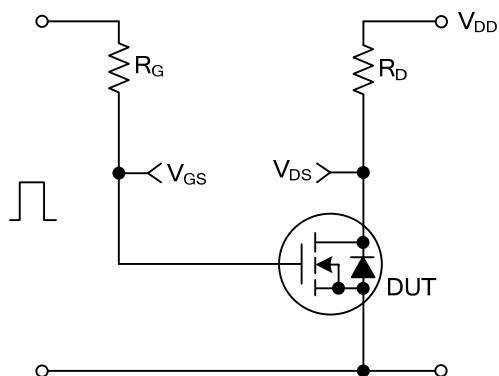
Gate Charge Test Circuit



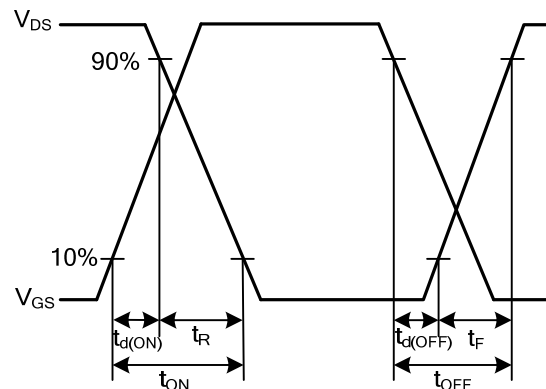
Gate Charge Waveforms



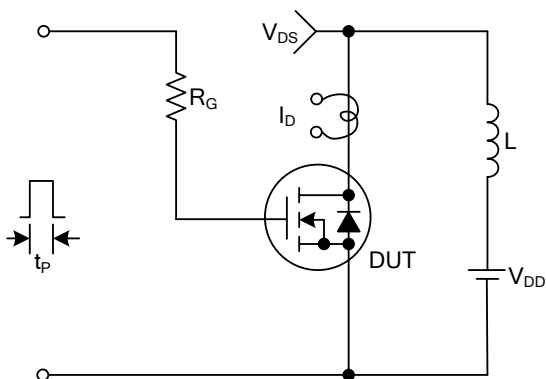
Resistive Switching Test Circuit



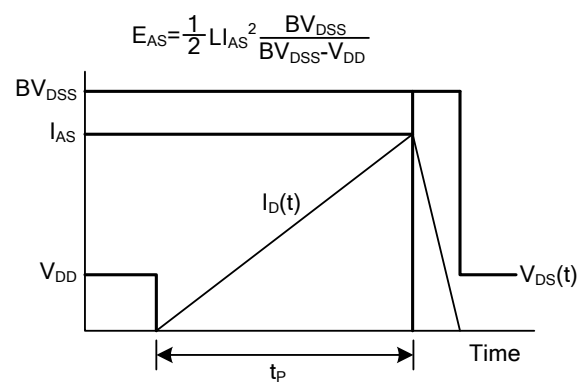
Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms



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