



UT3N06

Power MOSFET

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

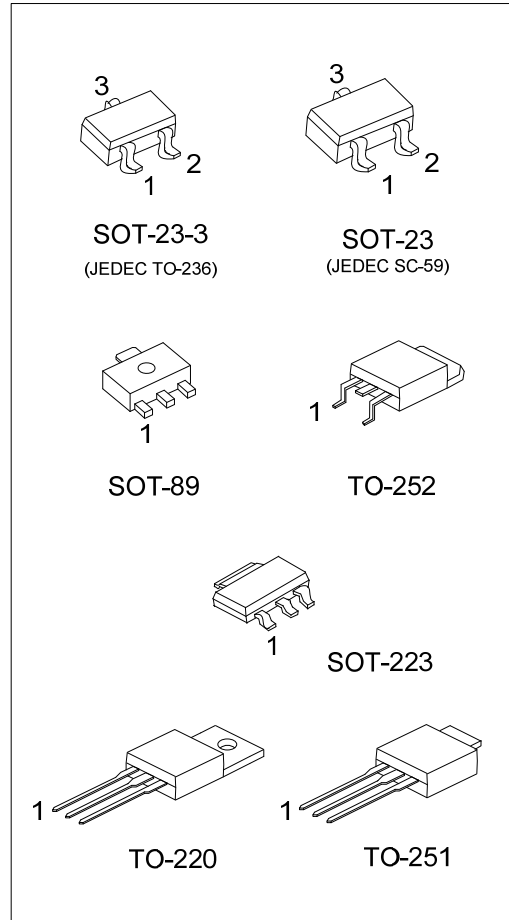
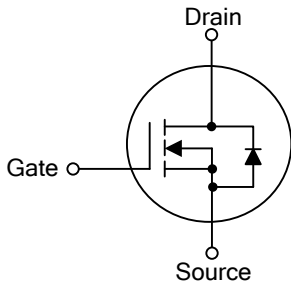
■ DESCRIPTION

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

* Simple drive requirement

■ SYMBOL



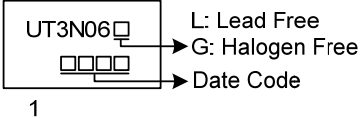
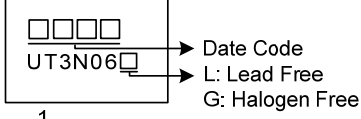
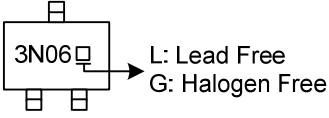
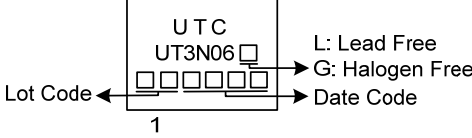
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT3N06L-AA3-R	UT3N06G-AA3-R	SOT-223	G	D	S	Tape Reel
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
UT3N06L-TA3-T	UT3N06G-TA3-T	TO-220	G	D	S	Tube
UT3N06L-TM3-T	UT3N06G-TM3-T	TO-251	G	D	S	Tube
UT3N06L-TN3-R	UT3N06G-TN3-R	TO-252	G	D	S	Tape Reel

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

<p>UT3N06G-AA3-R</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p>	<p>(1) T: Tube, R: Tape Reel (2) AA3: SOT-223, AB3: SOT-89, AE2: SOT-23-3, AE3: SOT-23, TA3: TO-220, TM3: TO-251, TN3: TO-252 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

SOT-223	SOT-89
 <p>1</p>	 <p>1</p>
SOT-23 / SOT-23-3	TO-220 / TO-252
	 <p>1</p>

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	60	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current ($V_{GS}=4.5V$, $T_A=25^{\circ}C$) (Note 2)	I_D	3	A
Pulsed Drain Current (Note 3, 4)	I_{DM}	12	A
Power Dissipation ($T_A=25^{\circ}C$)	SOT-223	3	W
	SOT-23-3/SOT-23	1.25	W
	SOT-89	1.4	W
	TO-220	2	W
	TO-251/TO-252	3.13	W
Junction Temperature	T_J	+150	$^{\circ}C$
Storage Temperature	T_{STG}	-55 ~ +150	$^{\circ}C$

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. Surface mounted on 1 in² copper pad of FR4 board; 270 $^{\circ}C/W$ when mounted on min. copper pad.

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

4. Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	SOT-223	42 (Note)	$^{\circ}C/W$
	SOT-23-3/SOT-23	100 (Note)	$^{\circ}C/W$
	SOT-89	89.3 (Note)	$^{\circ}C/W$
	TO-220	62	$^{\circ}C/W$
	TO-251/TO-252	40 (Note)	$^{\circ}C/W$

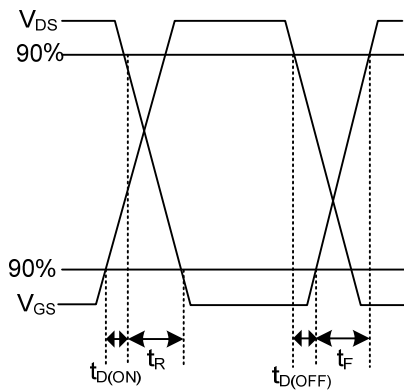
Note: Surface mounted on 1 in² copper pad of FR4 board; 270 $^{\circ}C/W$ when mounted on min. copper pad.

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

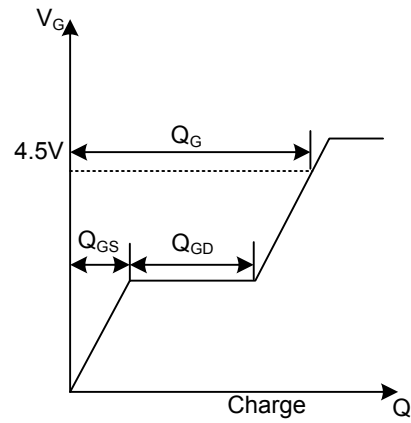
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250μA	60			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} = 60V, V _{GS} = 0V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} = ±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D = 250μA	1.0		3.0	V
Drain to Source On-state Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 3.0A		65	90	mΩ
		V _{GS} = 4.5V, I _D = 2.0A		80	120	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz		475		pF
Output Capacitance	C _{OSS}			40		pF
Reverse Transfer Capacitance	C _{RSS}			30		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note)	Q _G	V _{GS} = 10V, V _{DS} = 30V, I _D = 3A, I _G = 1mA		14.5		nC
Gate Source Charge	Q _{GS}			2.3		nC
Gate Drain Charge	Q _{GD}			2.2		nC
Turn-ON Delay Time (Note)	t _{D(ON)}	V _{DD} = 30V, I _D = 3A, R _{GEN} = 25Ω, V _{GS} = 10V		4		ns
Turn-ON Rise Time	t _R			15		ns
Turn-OFF Delay Time	t _{D(OFF)}			50		ns
Turn-OFF Fall-Time	t _F			25		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I _S				3	A
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				12	A
Drain-Source Diode Forward Voltage (Note)	V _{SD}	I _S = 1.2A, V _{GS} = 0V			1.2	V
Reverse Recovery Time	t _{rr}	I _S = 3A, V _{GS} = 0V, di/dt = 100A/μs		26		ns
Reverse Recovery Charge	Q _{rr}				13	

Note: Pulse width ≤ 300μs, duty cycle ≤ 2%.

■ TEST WAVEFORMS

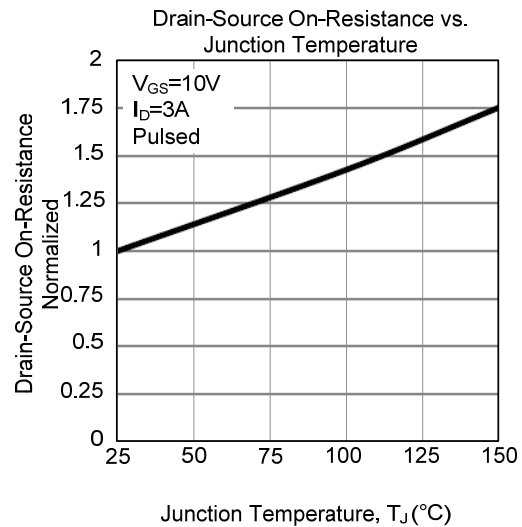
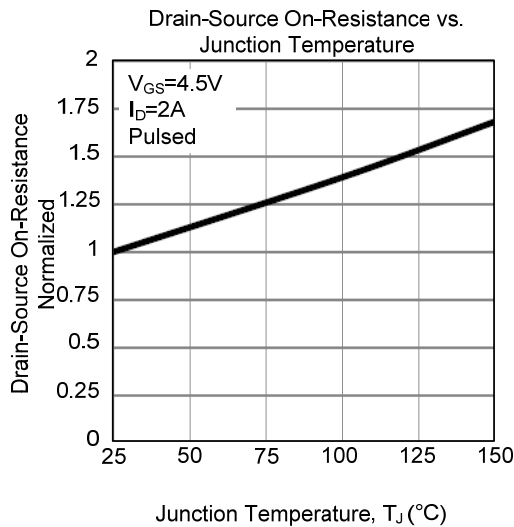
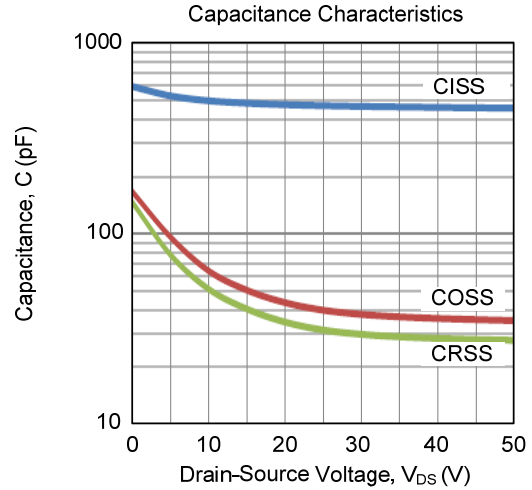
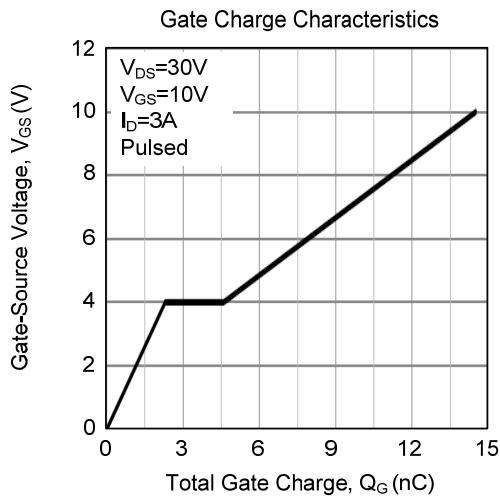
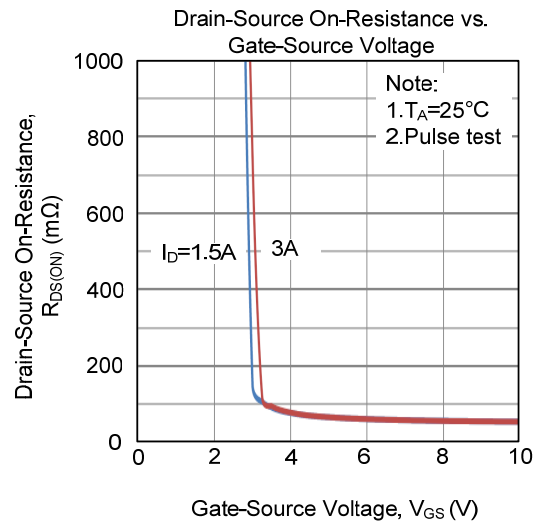
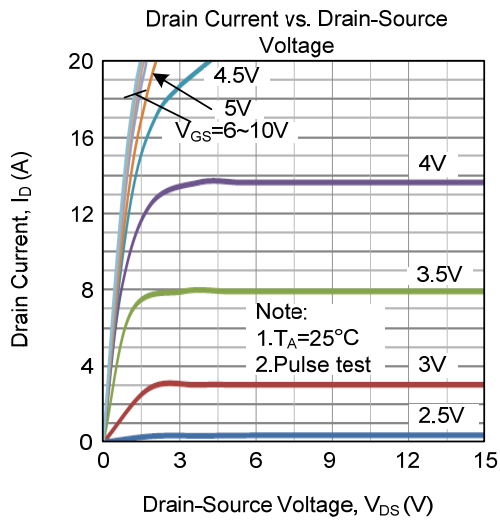


Switching Time Waveform

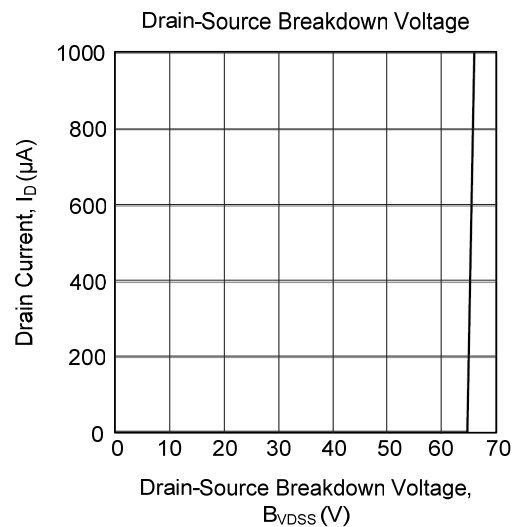
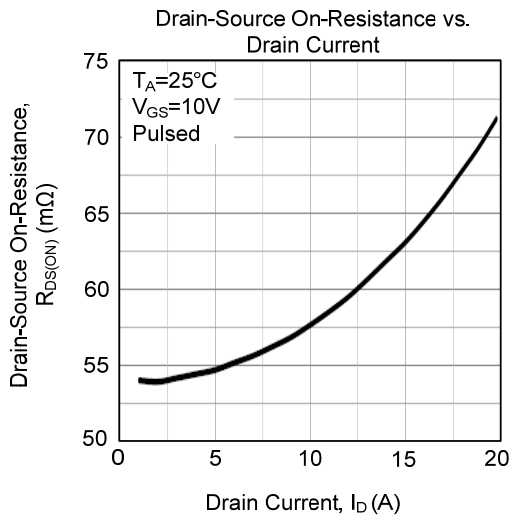
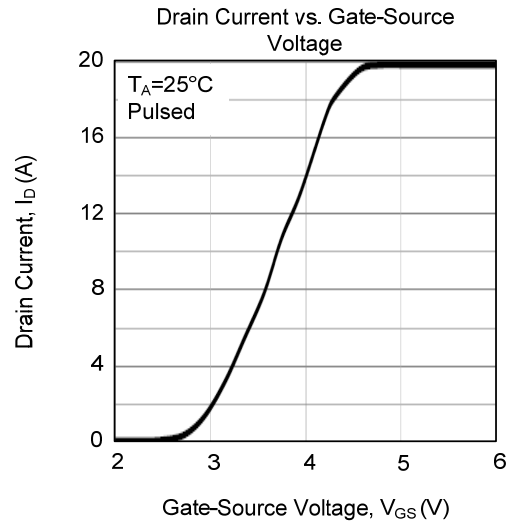
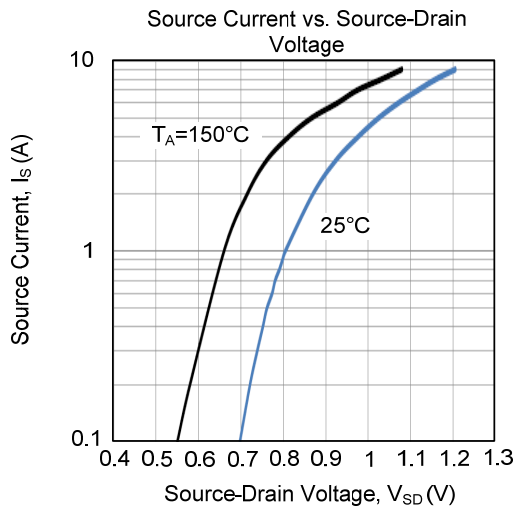
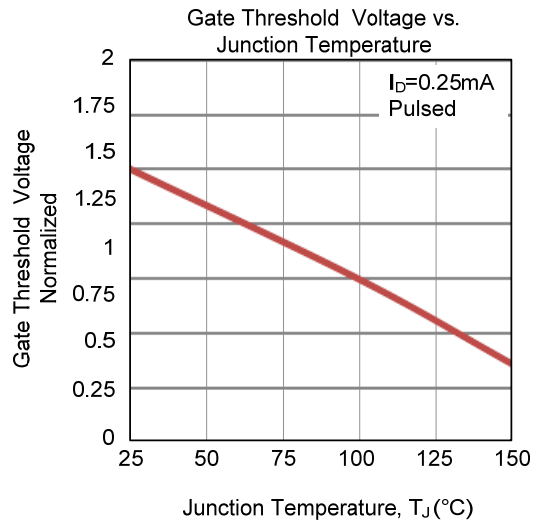
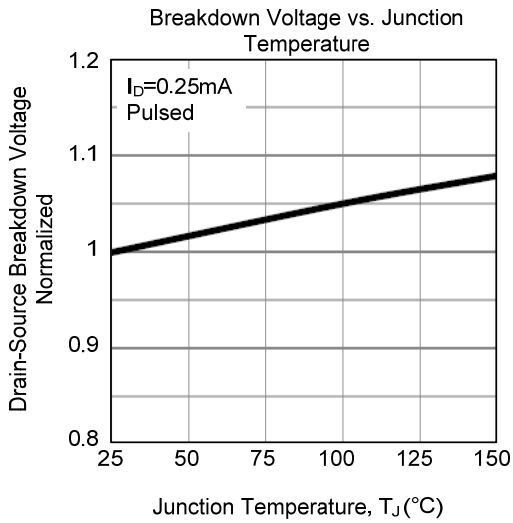


Gate Charge Waveform

TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



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