

UNISONIC TECHNOLOGIES CO., LTD

UT3N06 Power MOSFET

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

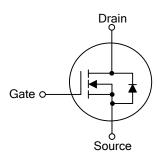
DESCRIPTION

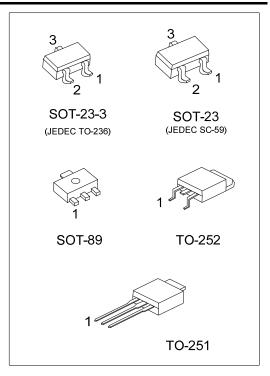
The UTC UT3N06 is an N-channel power MOSFET providing very low on-resistance. It has high efficiency and perfect cost-effectiveness. It can be generally applied in the commercial and industrial fields.

FEATURES

* Simple drive requirement

SYMBOL

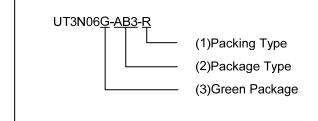




ORDERING INFORMATION

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



(1) T: Tube, R: Tape Reel

(2) AB3: SOT-89, AE2: SOT-23-3, AE3: SOT-23,

TM3: TO-251, TN3: TO-252

(3) G: Halogen Free and Lead Free, L: Lead Free

UT3N06 Power MOSFET

■ MARKING

PACKING	MARKING			
SOT-89	Date Code L: Lead Free G: Halogen Free			
SOT-23 SOT-23-3	☐ SN06☐ L: Lead Free G: Halogen Free			
TO-252	UTC UT3N06 UTC UT3N06 G: Halogen Free Lot Code Date Code			

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{ extsf{DSS}}$	60	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current (V _{GS} =4.5V, T _A = 25°C) (Note 2)		I _D	3	Α
Pulsed Drain Current (Note 3, 4	ed Drain Current (Note 3, 4)		12	Α
,	SOT-23-3/SOT-23	P _D	1.25	W
Power Dissipation (T _A = 25°C)	SOT-89		1.4	W
	TO-251/TO-252		3.13	W
Junction Temperature	nction Temperature		+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. Surface mounted on 1 in² copper pad of FR4 board; 270°C/W when mounted on min. copper pad.
 - 3. Repetitive Rating: Pulse width limited by maximum junction temperature.
 - 4. Pulse Test: Pulse width ≤ 300µs, Duty cycle ≤ 2%.

■ THERMAL DATA

PARAMETER		SYMBOL	RATING	UNIT
	SOT-23-3/SOT-23		100	°C/W
Junction to Ambient	SOT-89	θ_{JA}	89.3	°C/W
	TO-251/TO-252		40	°C/W

Note: Surface mounted on 1 in² copper pad of FR4 board; 270°C/W when mounted on min. copper pad

UT3N06

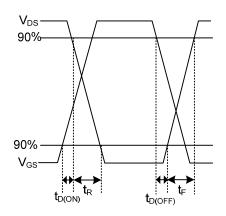
Power MOSFET

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

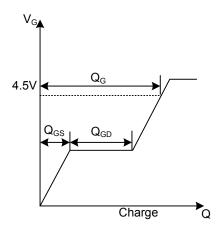
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250 \mu A$				V	
Drain-Source Leakage Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μΑ	
Gate-Source Leakage Current	I_{GSS}	V _{GS} =±20V			±100	nA	
ON CHARACTERISTICS							
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}$, $I_D = 250 \mu A$	1.0		3.0	V	
Drain to Source On-state Resistance	R _{DS(ON)}	$V_{GS} = 10V, I_D = 3.0A$			90	mΩ	
Dialii to Source Off-state Resistance		$V_{GS} = 4.5V, I_D = 2.0A$			120	mΩ	
DYNAMIC PARAMETERS	-		-			_	
Input Capacitance	C_{ISS}			475		pF	
Output Capacitance	Coss	V_{DS} =25V, V_{GS} =0V, f =1.0MHz		40		pF	
Reverse Transfer Capacitance	C_{RSS}			30		pF	
SWITCHING PARAMETERS	_		ā.				
Total Gate Charge (Note)	Q_{G}	V -10V V -20V I -2A		14.5		nC	
Gate Source Charge	Q_GS	V_{GS} =10V, V_{DS} =30V, I_{D} =3A, I_{G} =1mA		2.3		nC	
Gate Drain Charge	Q_GD			2.2		nC	
Turn-ON Delay Time (Note)	$t_{D(ON)}$			4		ns	
Turn-ON Rise Time	t_R	V_{DD} =30V, I_D =3A, R_{GEN} =25 Ω ,		15		ns	
Turn-OFF Delay Time	t _{D(OFF)}	V_{DD} =30V, I_{D} =3A, R_{GEN} =25 Ω , V_{GS} =10V		50		ns	
Turn-OFF Fall-Time	t_{F}			25		ns	
SOURCE- DRAIN DIODE RATINGS AND CHA	ARACTERIS	STICS				_	
Maximum Continuous Drain-Source Diode	ı				3	Α	
Forward Current	I _S				3	А	
Maximum Pulsed Drain-Source Diode	1				12	Α	
Forward Current	I _{SM}				12	^	
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, dl/dt=100A/μs		26		ns	
Reverse Recovery Charge	Q_{rr}	17.8 17.8		17.8		μC	

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

■ TEST WAVEFORMS

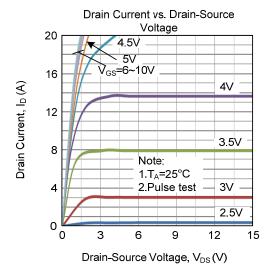


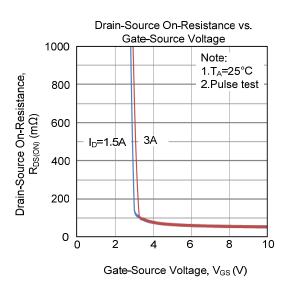
Switching Time Waveform

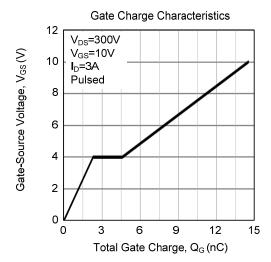


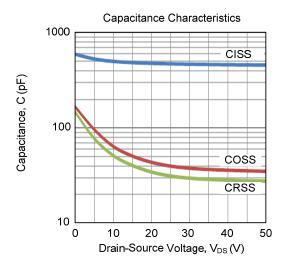
Gate Charge Waveform

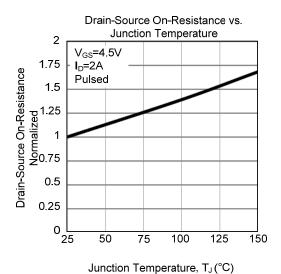
■ TYPICAL CHARACTERISTICS

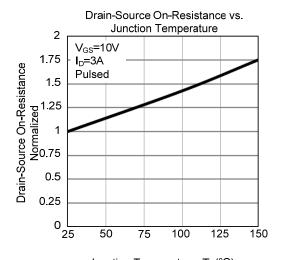




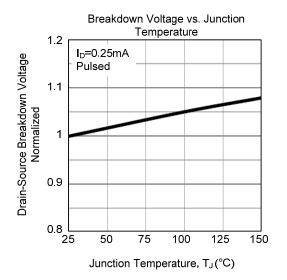


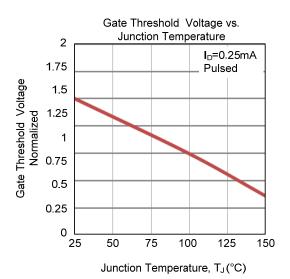


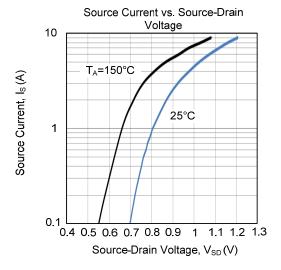


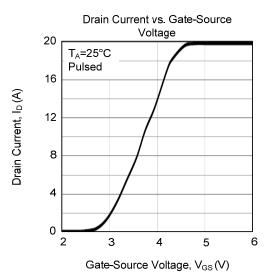


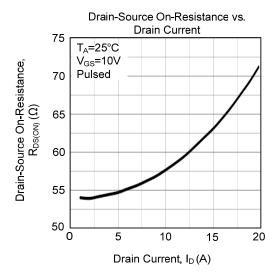
■ TYPICAL CHARACTERISTICS (Cont.)

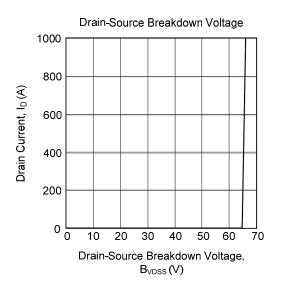












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