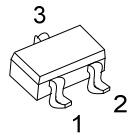
UT2311-F

Power MOSFET

-4.7A, -20V P-CHANNEL ENHANCEMENT MODE POWER MOSFET

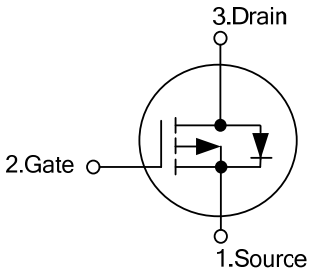


SOT-23-3
(JEDEC TO-236)

■ FEATURES

* Extremely low on-resistance due to high density cell
* Perfect thermal performance and electrical capability with advanced technology of trench process

■ SYMBOL



■ ORDERING INFORMATION

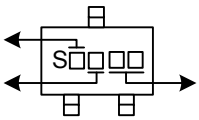
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT2311L-AE2-R	UT2311G-AE2-R	SOT-23-3	G	S	D	Tape Reel

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

UT2311G-AE2-R (1)Packing Type	(1) R: Tape Reel
(2)Package Type	(2) AE2: SOT-23-3
(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

Year: K: 2016 (1H)
L: 2016 (2H)
M: 2017 (1H)
N: 2017 (2H)
Week: 01~26 (A~Z)



■ ABSOLUTE MAXIMUM RATINGS (T_C = 25°C, unless otherwise noted)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	-20	V
Gate-Source Voltage	V_{GSS}	±8	V
Continuous Drain Current	I_D	-4.7	A
Pulsed Drain Current	I_{DM}	-18.8	A
Power Dissipation (T_C=25°C) (Note 2)	P_D	1.25	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. Surface mounted on 1 in 2 copper pad of FR4 board.

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient (PCB mounted)	θ_{JA}	80	°C/W

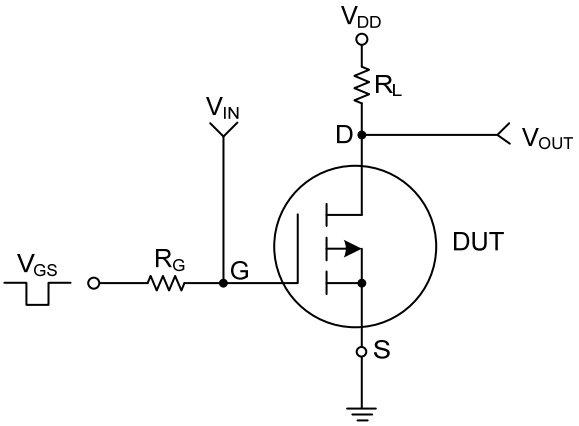
Note: Surface Mounted on FR4 board t ≤ 5 sec.

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

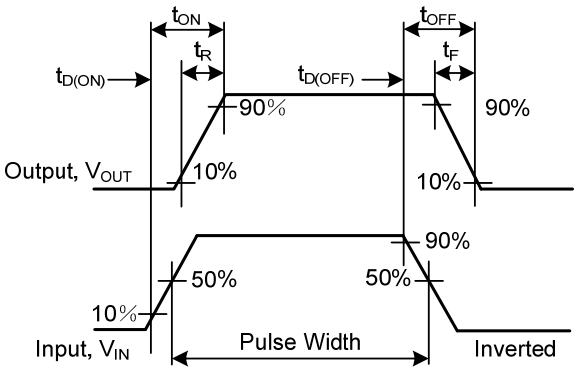
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V, I_D =-250μA	-20			V
Drain-Source Leakage Current	I_{DSS}	V_{DS} =-16V,V_{GS} =0V			-1.0	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS} =±8V, V_{DS} =0V			±100	nA
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C, I_D=-1mA		-0.02		V/°C
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS} =V_{GS}, I_D =-250μA	-0.3		-0.8	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} =-4.5V, I_D =-4.0 A			55	mΩ
		V_{GS} =-2.5V, I_D =-2.5 A			85	mΩ
		V_{GS} =-1.8V, I_D =-1.0 A			100	mΩ
DYNAMIC PARAMETERS[b]						
Input Capacitance	C_{ISS}	V_{DS} =-10V, V_{GS} =0V, f =1.0MHz		850		pF
Output Capacitance	C_{OSS}			70		pF
Reverse Transfer Capacitance	C_{RSS}			55		pF
SWITCHING PARAMETERS[b]						
Total Gate Charge	Q_G	V_{GS} =-10V, V_{GS} =-4.5V, I_D =-3.0A		9.6		nC
Gate Source Charge	Q_{GS}			1.6		nC
Gate Drain Charge	Q_{GD}			2.0		nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{DD} =-10V, V_{GS} =-4.5V, I_D =-1.0A R_G =25Ω		6.0		ns
Turn-ON Rise Time	t_R			21.6		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			51		ns
Turn-OFF Fall-Time	t_F			13.8		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Body-Diode Continuous Current	I_S	V_G=V_D=0V , Force Current			-4.7	A
Maximum Body-Diode Pulsed Current	I_{SM}				-18.8	A
Drain-Source Diode Forward Voltage	V_{SD}	I_S=-1.0A, V_{GS}=0V, T_J = 25°C			-1.0	V

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

■ TEST CIRCUITS AND WAVEFORMS



Switching Test Circuit



Switching Waveforms

■ TYPICAL CHARACTERISTICS

Fig.1 Continuous Drain Current vs. Case Temperature

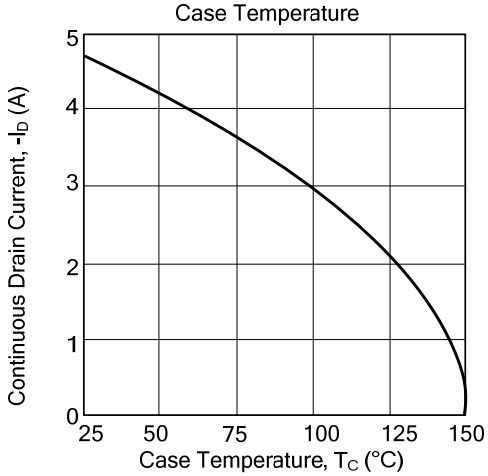


Fig.2 Normalized R_{DSON} vs. Junction Temperature

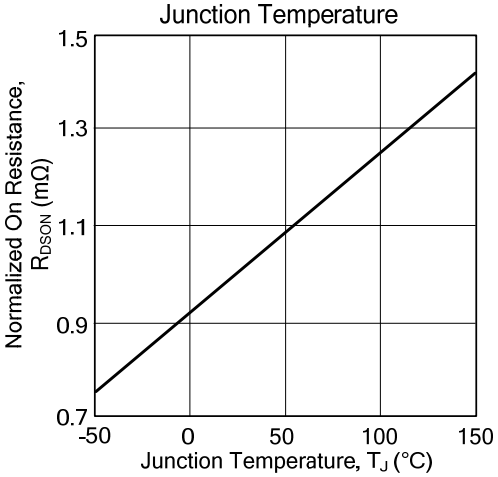


Fig.3 Normalized V_{th} vs. Junction Temperature

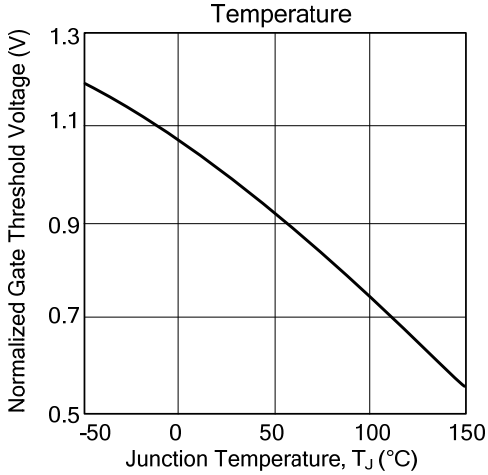


Fig.4 Gate Charge Waveform

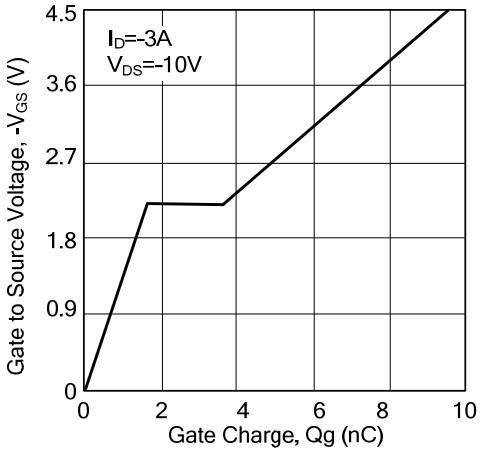


Fig.5 Normalized Transient Impedance

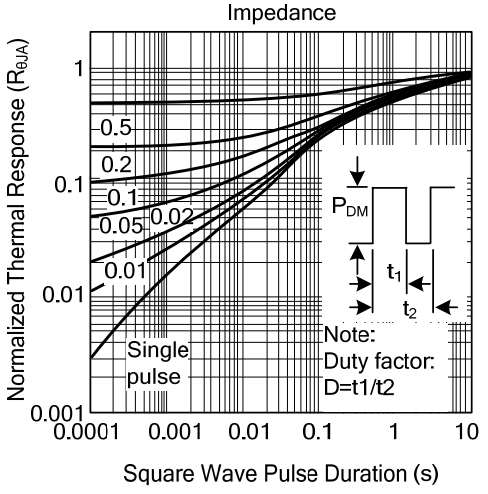


Fig.6 Maximum Safe Operation Area