



UT2311-F

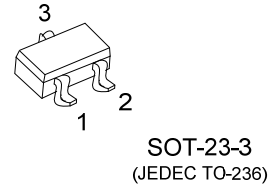
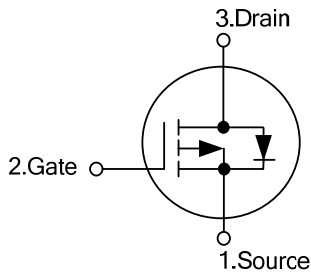
Power MOSFET

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

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

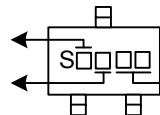
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT2311L-AE2-R	UT2311G-AE2-R	SOT-23-3	G	S	D	Tape Reel

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) → Lot Code



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current	I_D	-4.7	A
Pulsed Drain Current	I_{DM}	-18.8	A
Power Dissipation ($T_C=25^\circ\text{C}$) (Note 2)	P_D	1.25	W
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +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. 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	$^\circ\text{C/W}$

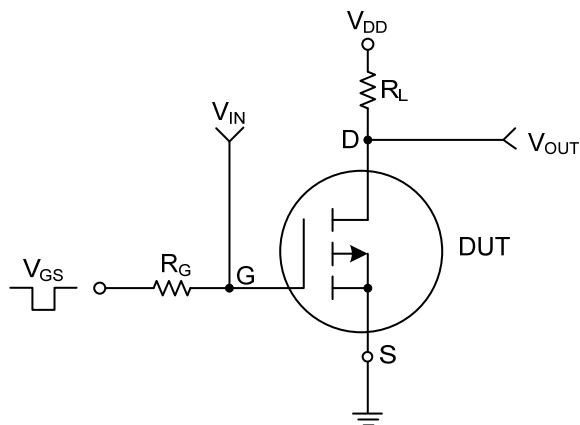
Note: Surface Mounted on FR4 board $t \leq 5$ sec.

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

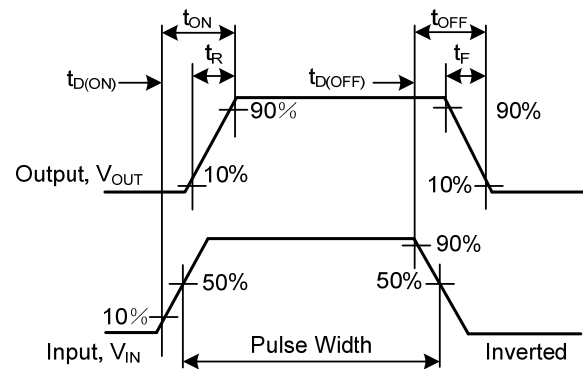
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-20			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-16V, V _{GS} =0V			-1.0	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±8V, V _{DS} =0V			±100	nA
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} /ΔT _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 $\leq 300\mu s$, duty cycle $\leq 2\%$.

■ TEST CIRCUITS AND WAVEFORMS



Switching Test Circuit



Switching Waveforms

TYPICAL CHARACTERISTICS

Fig.1 Continuous Drain Current vs. Case Temperature

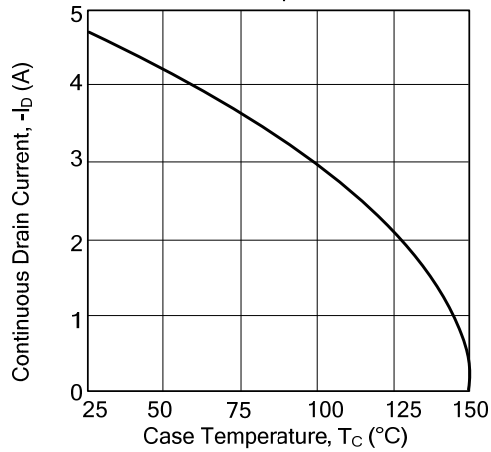


Fig.2 Normalized $R_{DS(on)}$ vs. Junction Temperature

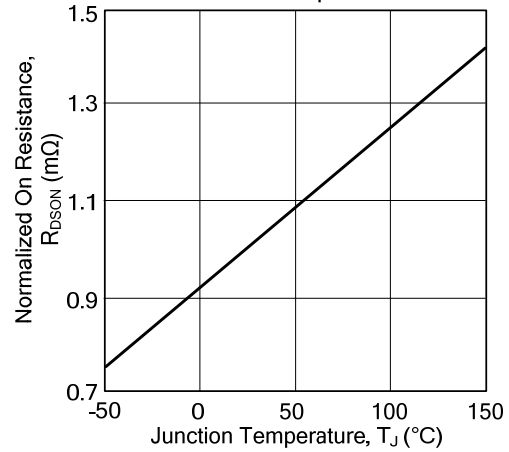


Fig.3 Normalized V_{th} vs. Junction Temperature

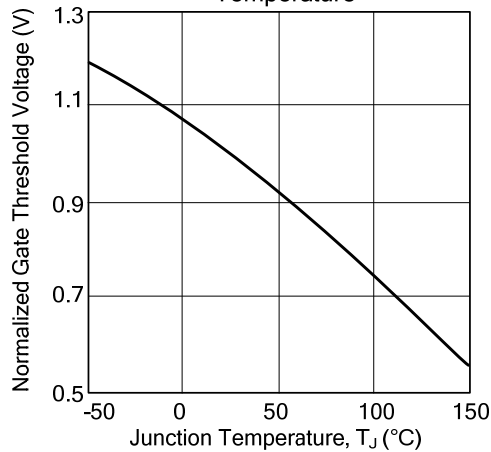


Fig.4 Gate Charge Waveform

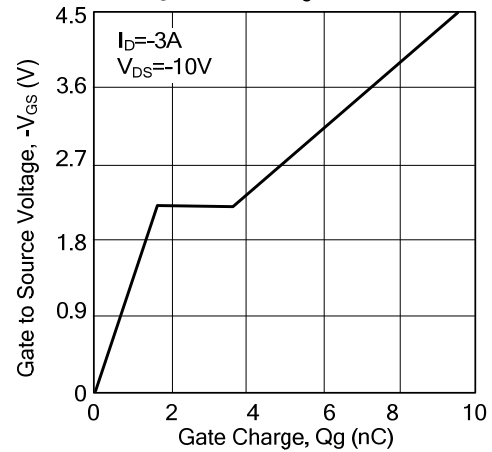


Fig.5 Normalized Transient Impedance

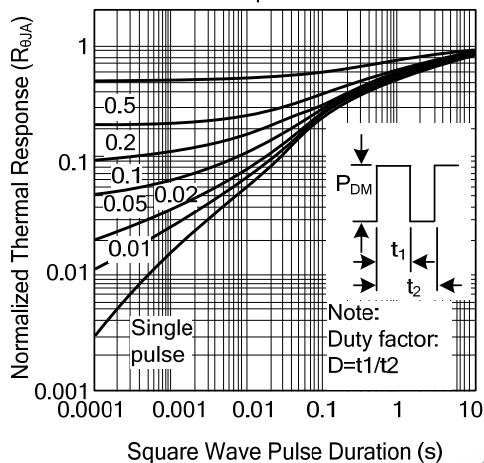
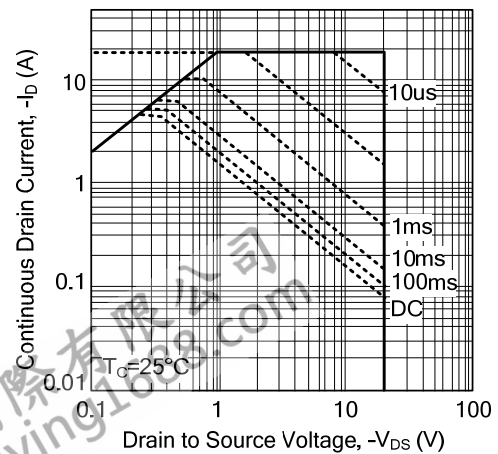


Fig.6 Maximum Safe Operation Area



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