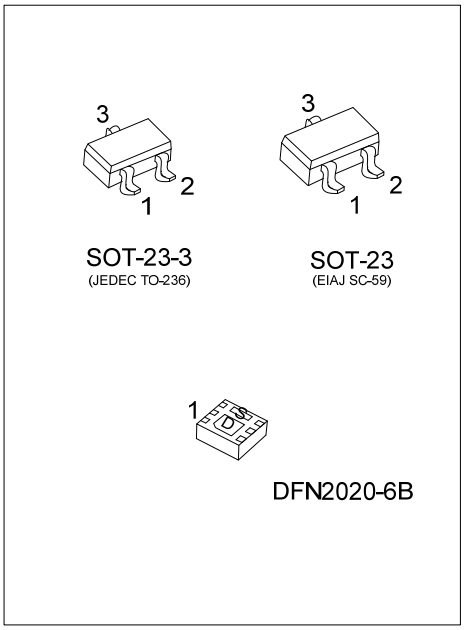
UT2311

Power MOSFET

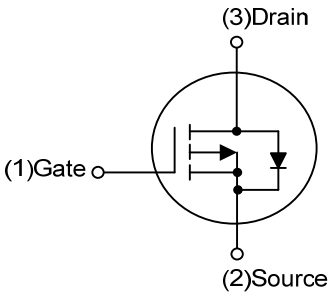
-4.0A, -20V P-CHANNEL ENHANCEMENT MODE MOSFET



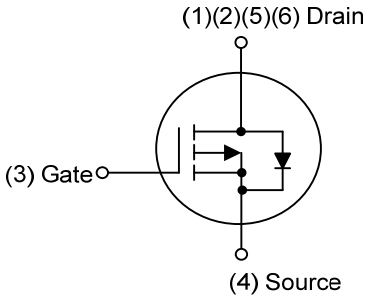
■ FEATURES

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

■ SYMBOL



SOT-23-3 / SOT-23



DFN2020-6B

■ ORDERING INFORMATION

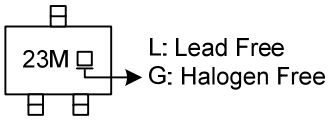
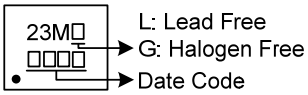
Ordering Number		Package	Pin Assignment						Packing
Lead Free	Halogen Free		1	2	3	4	5	6	
UT2311L-AE2-R	UT2311G-AE2-R	SOT-23-3	G	S	D	-	-	-	Tape Reel
UT2311L-AE3-R	UT2311G-AE3-R	SOT-23	G	S	D	-	-	-	Tape Reel
UT2311L-K06B-2020-R	UT2311G-K06B-2020-R	DFN2020-6B	D	D	G	S	D	D	Tape Reel

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

UT2311G-AE2-R
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) AE2: SOT-23-3, AE3: SOT-23
K06B-2020: DFN2020-6B
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

SOT-23-3 / SOT-23	DFN2020-6B
	

■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	-20	V
Gate-Source Voltage		V_{GSS}	±8	V
Continuous Drain Current		I_D	-4	A
Pulsed Drain Current		I_{DM}	-20	A
Power Dissipation (T_A=25°C) (Note 2)	SOT-23-3	P_D	1	W
	SOT-23		1.25	W
	DFN2020-6B		1.67	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)	SOT-23-3	θ_{JA}	125	°C/W
	SOT-23		100	°C/W
	DFN2020-6B		75	°C/W

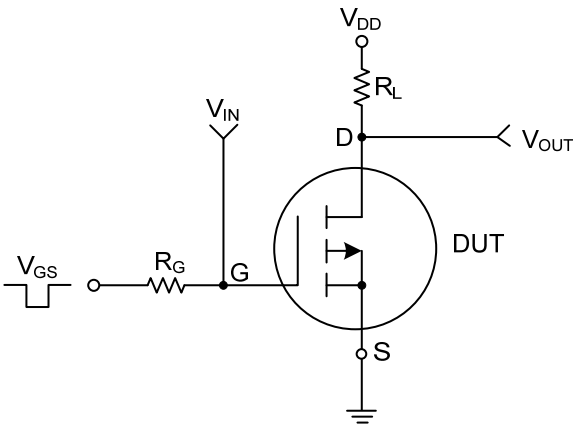
Note: Surface Mounted on FR4 board t ≤ 5 sec.

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

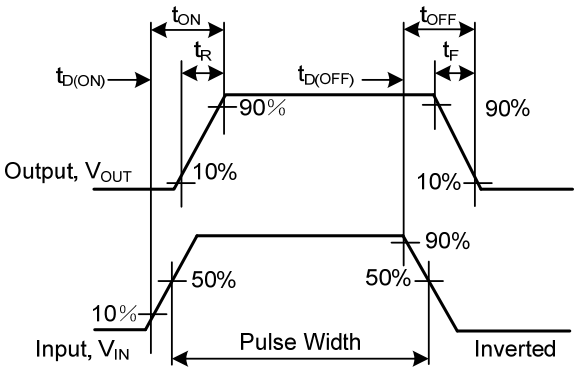
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-250μA	-20			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-16V, V_{GS}=0V			-1.0	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.45			V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-4.0A		45	55	mΩ
		V_{GS}=-2.5V, I_D=-2.5A		75	85	mΩ
On-State Drain Current	$I_{D(ON)}$	V_{DS}≥-10V, V_{GS}=-4.5V	-6			A
DYNAMIC PARAMETERS[b]						
Input Capacitance	C_{ISS}	V_{DS}=-6V, V_{GS}=0V, f=1.0MHz		970		pF
Output Capacitance	C_{OSS}			485		pF
Reverse Transfer Capacitance	C_{RSS}			160		pF
SWITCHING PARAMETERS[b]						
Total Gate Charge	Q_G	V_{GS}=-4.5V, V_{DS}=-6V, I_D=-4.0A		8.5	12	nC
Gate Source Charge	Q_{GS}			1.5		nC
Gate Drain Charge	Q_{GD}			2.1		nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{DD}=-4.0V, V_G=-4.5V, I_D=-1.0A, R_L=4.0Ω, R_G=6Ω		18		ns
Turn-ON Rise Time	t_R			45		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			95		ns
Turn-OFF Fall-Time	t_F			65		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I_S				-1.6	A
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=-1.6A		-0.8	-1.2	V

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

■ TEST CIRCUITS AND WAVEFORMS



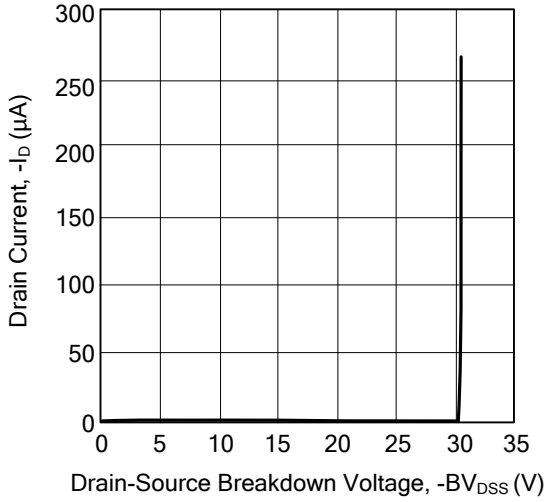
Switching Test Circuit



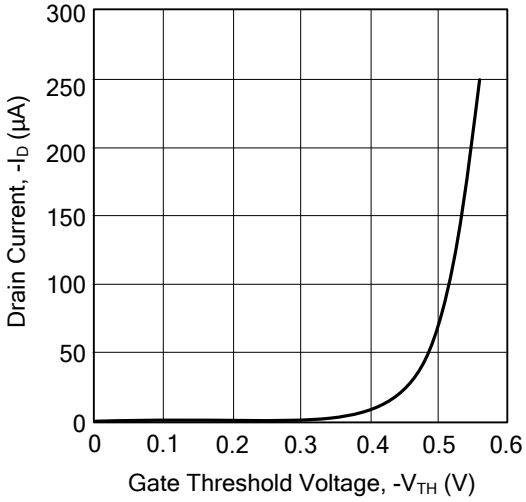
Switching Waveforms

■ TYPICAL CHARACTERISTICS

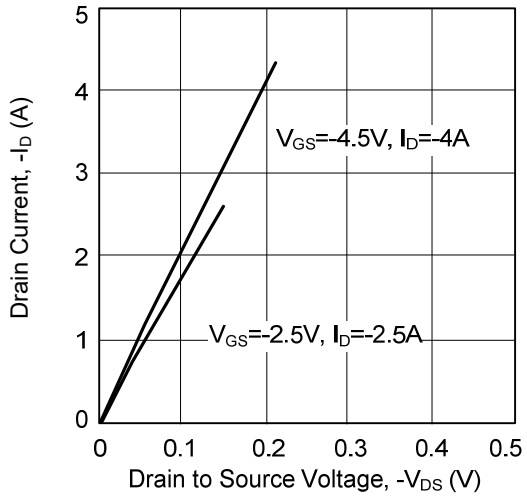
Drain Current vs. Drain-Source Breakdown Voltage



Drain Current vs. Gate Threshold Voltage



Drain-Source On-State Resistance Characteristics



Drain Current vs. Source to Drain Voltage