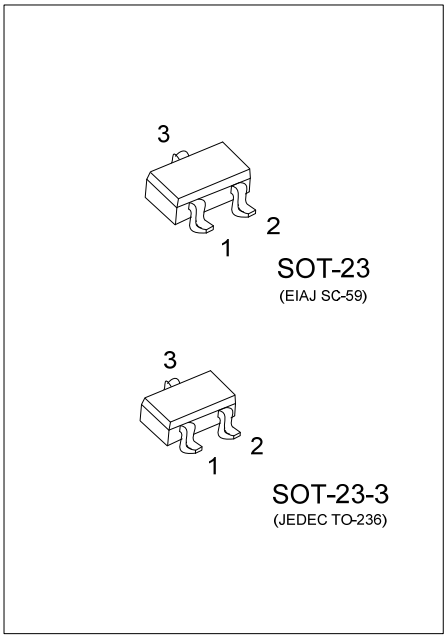
UT2327

Power MOSFET

P-CHANNEL ENHANCEMENT MODE

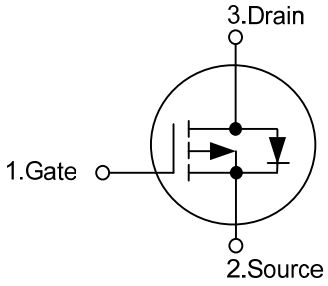


■ DESCRIPTION

The UTC **UT2327** is P-channel enhancement mode Power MOSFET, designed in serried ranks. with fast switching speed, low on-resistance, favorable stabilization.

Used in commercial and industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

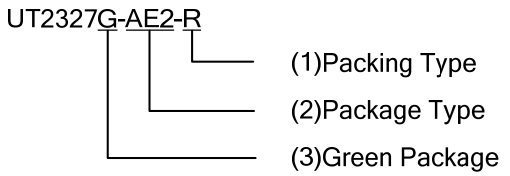
■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT2327L-AE2-R	UT2327G-AE2-R	SOT-23-3	G	S	D	Tape Reel
UT2327L-AE3-R	UT2327G-AE3-R	SOT-23	G	S	D	Tape Reel

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

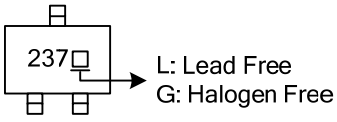


(1) R: Tape Reel

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

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

■ MARKING



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

PARAMETER		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DS}	- 20	V
Gate-Source Voltage		V_{GS}	± 12	V
Continuous Drain Current (Note 3)	T_A=25°C	I_D	-2.6	A
	T_A=70°C		-2.1	A
Pulsed Drain Current (Note 1, 2)		I_{DM}	-10	A
Total Power Dissipation (T_A=25°C)		P_D	1.38	W
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°C

Note: 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.

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient (Note 3)	θ_{JA}	90	°C/W

■ 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=-250uA	-20			V
Drain-Source Leakage Current	T_J=25°C	I_{DSS}	V_{DS}=-20V, V_{GS}=0V			-1	uA
	T_J=70°C		V_{DS}=-16V, V_{GS}=0V			-10	uA
Gate-Source Leakage Current		I_{GSS}	V_{GS}=±12V			±100	nA
Breakdown Voltage Temperature Coefficient		$\Delta BV_{DSS}/\Delta T_J$	Reference to 25℃, I_D=-1mA		-0.1		V/°C
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=-250uA	-0.5			V
Drain-Source On-State Resistance (Note 2)		$R_{DS(ON)}$	V_{GS}=-5V, I_D=-2.8A			130	mΩ
			V_{GS}=-2.8V, I_D=-2.0A			190	mΩ
Forward Transconductance		g_{FS}	V_{DS}=-5V, I_D=-2.8A		4.4		S
DYNAMIC CHARACTERISTICS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=-6V, f=1.0MHz		295		pF
Output Capacitance		C_{OSS}			170		pF
Reverse Transfer Capacitance		C_{RSS}			65		pF
SWITCHING CHARACTERISTICS							
Total Gate Charge (Note 2)		Q_G	V_{DS}=-6V, V_{GS}=-5V, I_D=-2.8A		5.2	10	nC
Gate-Source Charge		Q_{GS}			1.36		nC
Gate-Drain Charge		Q_{GD}			0.6		nC
Turn-ON Delay Time (Note 2)		$t_{D(ON)}$	V_{DS}=-15V, V_{GS}=-10V, I_D=-1A, R_G=6Ω, R_D=15Ω		5.2		ns
Turn-ON Rise Time		t_R			9.7		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			19		ns
Turn-OFF Fall Time		t_F			29		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Maximum Continuous Drain-Source Diode Forward Current		I_S	V_D=V_G=0V, V_S=-1.2V			-1	A
Maximum Pulsed Drain-Source Diode Forward Current (Note 1)		I_{SM}				-10	A
Drain-Source Diode Forward Voltage(Note2)		V_{SD}	T_J=25°C, I_S=-1.6A, V_{GS}=0V			-1.2	V

Notes: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Pulse width ≤300us, duty cycle ≤2%.
3. Surface mounted on 1 in^2 copper pad of FR4 board; 270°C /W when mounted on min.

■ TYPICAL CHARACTERISTICS

Fig 1. Typical Output Characteristics

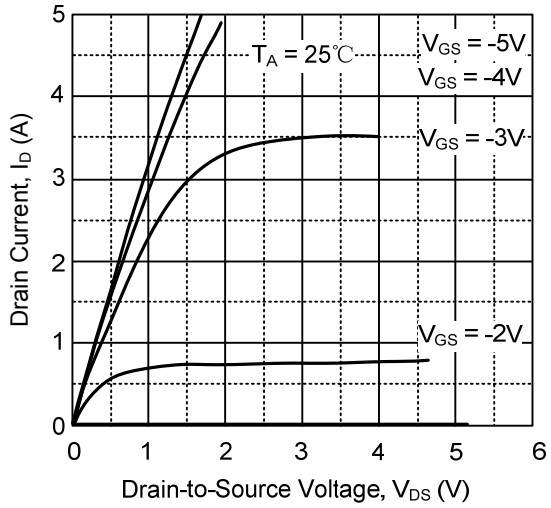


Fig 2. Typical Output Characteristics

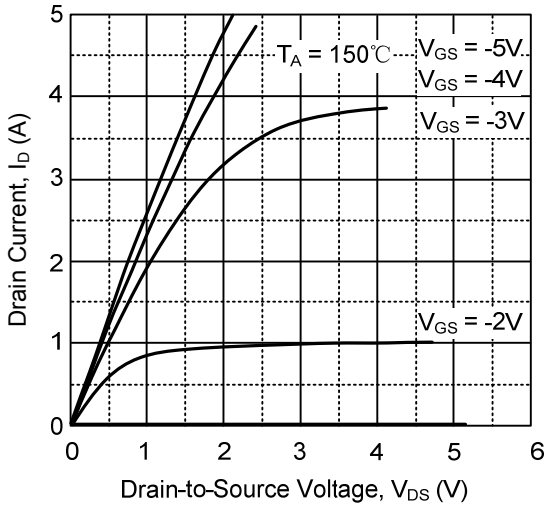


Fig 3. On-Resistance vs. Gate Voltage

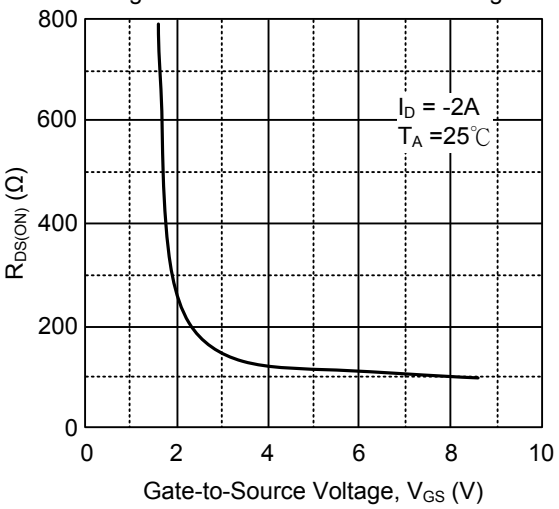


Fig 4. Normalized On-Resistance

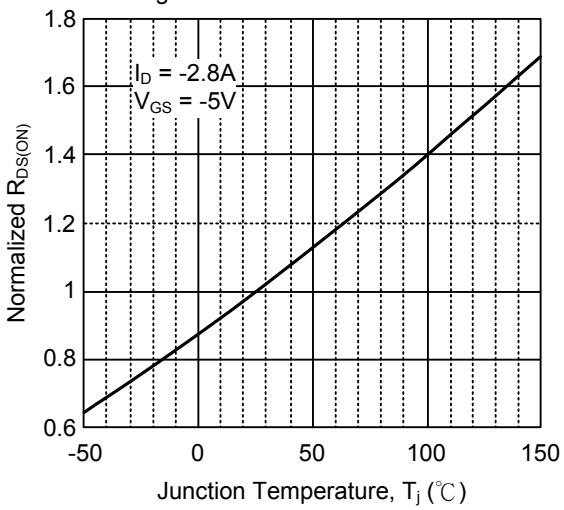


Fig 5. Forward Characteristic of Reverse Diode

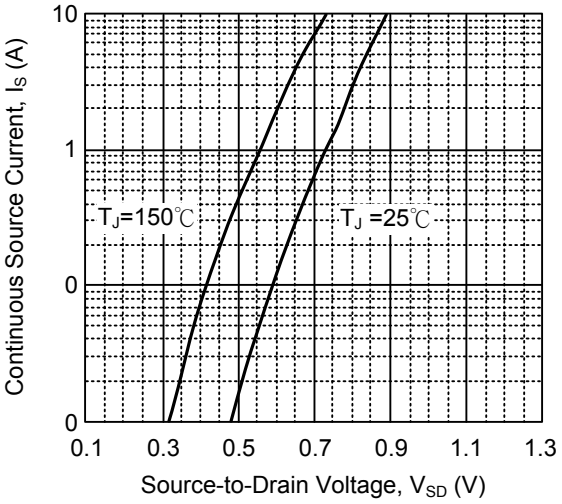
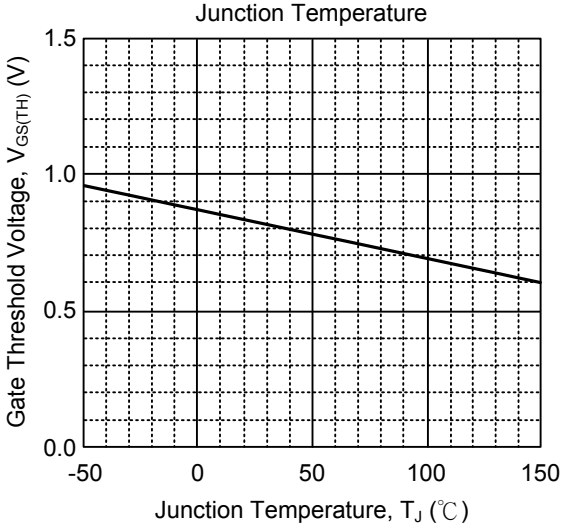


Fig 6. Gate Threshold Voltage vs. Junction Temperature



■ TYPICAL CHARACTERISTICS (Cont.)

Fig 7. Gate Charge Characteristics

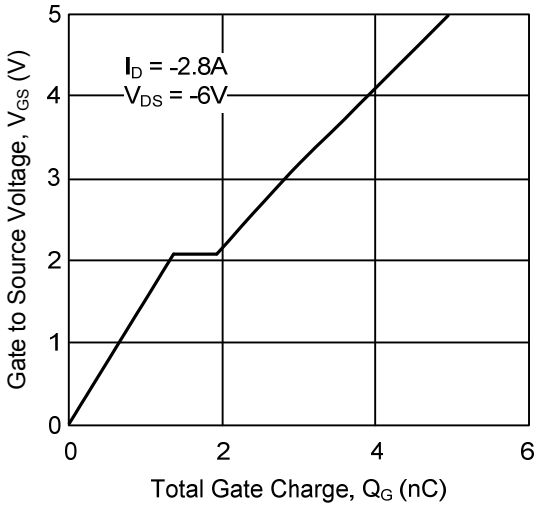


Fig 8. Typical Capacitance Characteristics

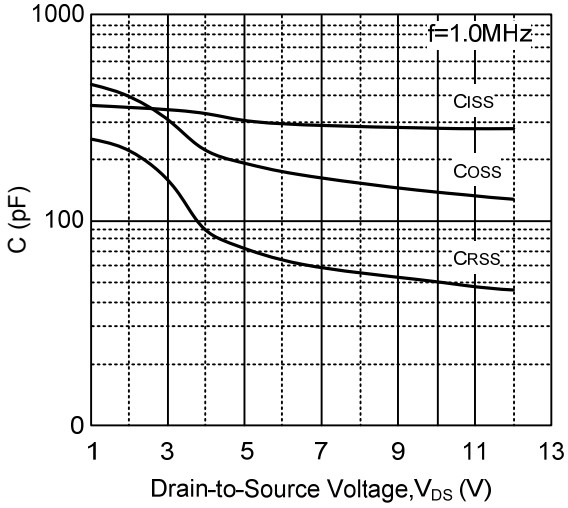


Fig 9. Maximum Safe Operating Area

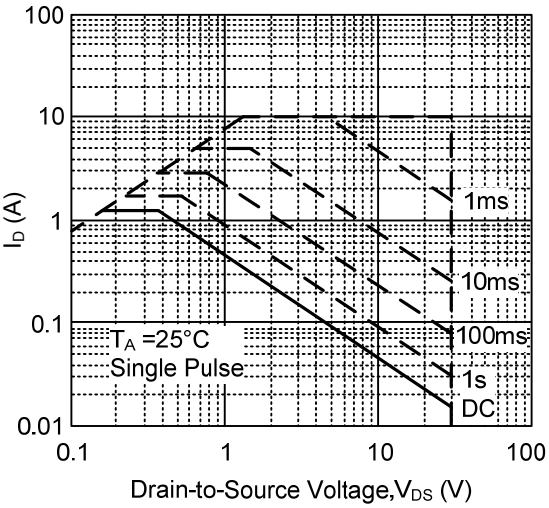


Fig 10. Effective Transient Thermal Impedance

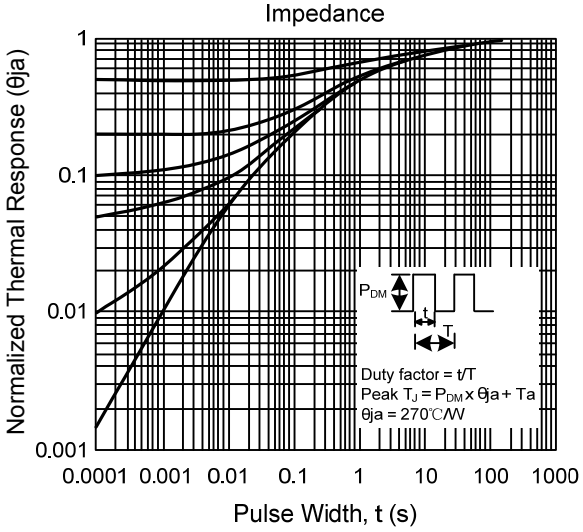


Fig 11. Switching Time Waveform

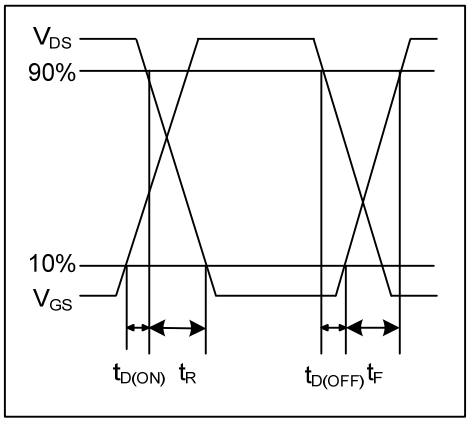


Fig 12. Gate Charge Waveform