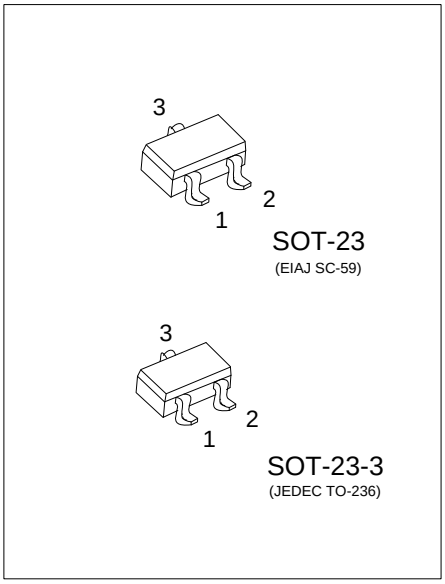
5.8A, 30V N-CHANNEL ENHANCEMENT MODE POWER MOSFET



■ DESCRIPTION

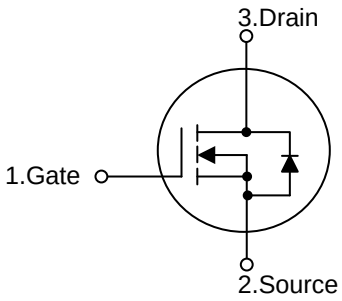
The UTC **UT3400** is an N-ch enhancement MOSFET providing the customers with perfect $R_{DS(ON)}$ and low gate charge. This device can be operated with 2.5V low gate voltage.

The UTC **UT3400** is optimized for applications, such as a load switch or in PWM.

■ FEATURES

* $R_{DS(ON)}$ ≤ 28 mΩ @ V_{GS}=10V, I_D=5.8A
  $R_{DS(ON)}$ ≤ 33 mΩ @ V_{GS}=4.5V, I_D=5.0A
  $R_{DS(ON)}$ ≤ 52 mΩ @ V_{GS}=2.5V, I_D=4.0A

■ SYMBOL



■ ORDERING INFORMATION

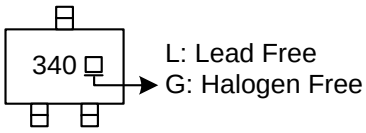
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT3400L-AE2-R	UT3400G-AE2-R	SOT-23-3	G	S	D	Tape Reel
UT3400L-AE3-R	UT3400G-AE3-R	SOT-23	G	S	D	Tape Reel

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

UT3400G-AE2-R

(1)Packing Type	(1) R: Tape Reel
(2)Package Type	(2) AE2: SOT-23-3, AE3: SOT-23
(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



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

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	5.8	A
Pulsed Drain Current (Note 2)	I_{DM}	30	A
Power Dissipation	P_D	1.4	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. Repetitive Rating : Pulse width limited by maximum junction temperature.
3. Pulse width ≤300μs, duty cycle≤0.5%.

■ THERMAL DATA

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction to Ambient (Note)	θ_{JA}		85	125	°C/W

Note: Surface mounted on 1 in^2 copper pad of FR4 board with 2oz.

■ 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 =250μA	30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS} =24V,V_{GS} =0V			1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS} =±12V, V_{DS} =0V			100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS} =V_{GS}, I_D =250μA	0.7	1.1	1.4	V
On-State Drain Current	$I_{D(ON)}$	V_{DS} =5V, V_{GS} =4.5V	30			A
Drain to Source On-state Resistance	$R_{DS(ON)}$	V_{GS} =10V, I_D =5.8A		22.8	28	mΩ
		V_{GS} =4.5V, I_D =5A		27.3	33	mΩ
		V_{GS} =2.5V, I_D =4 A		43.3	52	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS} =15V, V_{GS} =0V, f =1MHz		823		pF
Output Capacitance	C_{OSS}			99		pF
Reverse Transfer Capacitance	C_{RSS}			77		pF
Gate Resistance	R_G	V_{GS} =0V, V_{DS} =0V, f =1MHz		1.2		Ω
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	V_{GS} =4.5V, V_{DS} =15V, I_D =5.8A		9.7		nC
Gate Source Charge	Q_{GS}			1.6		nC
Gate Drain Charge	Q_{GD}			3.1		nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{GS} =10V,V_{DS} =15V R_L =2.7Ω,R_{GEN} =6Ω		5.5		ns
Turn-ON Rise Time	t_R			5.1		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			37		ns
Turn-OFF Fall-Time	t_F			4.2		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Diode Continuous Forward Current (Note 1)	I_S				2.5	A
Drain-Source Diode Forward Voltage	V_{SD}	I_S=1A, V_{GS} =0V		0.71	1	V
Reverse Recovery Time	t_{rr}	I_F=5A, dI/dt=100A/μs		16		ns
Reverse Recovery Charge	Q_{rr}			8.9		nC

Notes: 1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Pulse width ≤300μs, duty cycle≤0.5%.

■ TYPICAL CHARACTERISTICS