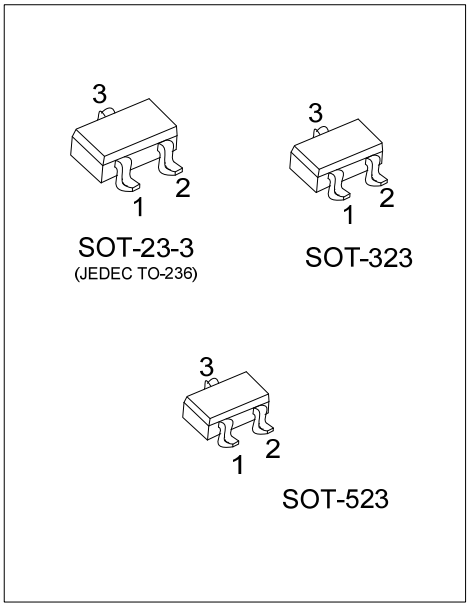
UK3018

Power MOSFET

2.5V DRIVE SILICON N-CHANNEL MOSFET



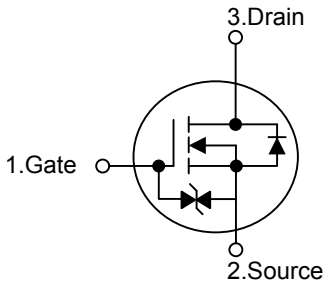
■ DESCRIPTION

The UTC **UK3018** is a Silicon N-channel MOSFET, designed to minimize on-state resistance while it provides rugged, reliable and fast switching performance. The product is particularly suited for low voltage and low current applications such as small servo motor controllers, power MOSFET gate drivers, and other switching applications.

■ FEATURES

* Min V_{DSS} =30V
* $R_{DS(ON)}$ ≤ 8.0 Ω @ V_{GS}=4.0V, I_D=10mA
  $R_{DS(ON)}$ ≤ 13 Ω @ V_{GS}=2.5V, I_D=1.0mA
* Pulsed I_D=400mA
* Low voltage drive (2.5V)

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UK3018L-AE2-R	UK3018G-AE2-R	SOT-23-3	G	S	D	Tape Reel
UK3018L-AL3-R	UK3018G-AL3-R	SOT-323	G	S	D	Tape Reel
UK3018L-AN3-R	UK3018G-AN3-R	SOT-523	G	S	D	Tape Reel

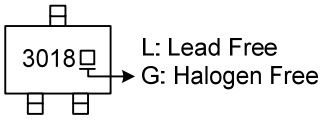
Note: Pin Assignment: G: Gate S: Source D: Drain

UK3018G-AE2-R

(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) AE2: SOT-23-3, AL3: SOT-323, AN3: SOT-523
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	+20	V
			-12	V
Drain Current	Continuous	I_D	100	mA
	Pulsed (Note 2)	I_{DP}	400	mA
Power Dissipation (Note 3)	SOT-23-3 SOT-323	P_D	200	mW
	SOT-523		150	mW
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. Pw≤10μs, Duty cycle≤1%.
3. With each pin mounted on the recommended lands.

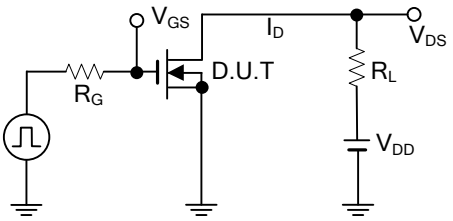
■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-23-3 SOT-323	θ_{JA}	625	°C/W
	SOT-523		833	°C/W

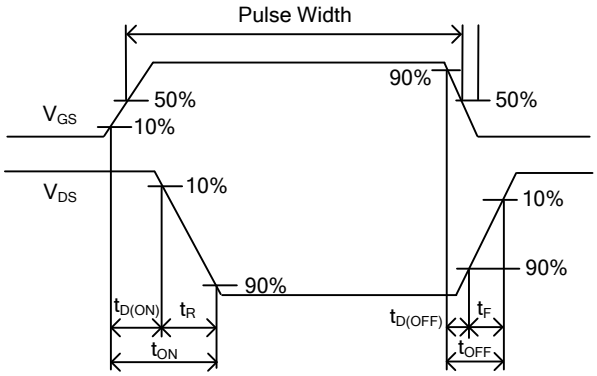
■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=10μA	30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V			1	μA
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=+20V			1	μA
		V_{DS}=0V, V_{GS}=-12V			-1	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=3V, I_D=100μA	0.8		1.5	V
Static drain-source on-state resistance	$R_{DS(ON)}$	V_{GS}=4V, I_D=10mA		5	8	Ω
		V_{GS}=2.5V, I_D=1mA		7	13	Ω
DYNAMIC PARAMETERS						
Input capacitance	C_{ISS}	V_{DS} = 5V, V_{GS} = 0V, f = 1MHz		13		pF
Output capacitance	C_{OSS}			9		pF
Reverse transfer capacitance	C_{RSS}			4		pF
SWITCHING PARAMETERS						
Turn-ON Delay Time	$t_{D(ON)}$	V_{GS} = 5V, V_{DD}≈5V I_D = 10mA, R_L = 500Ω, R_G = 10Ω		15		ns
Turn-ON Rise Time	t_R			35		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			80		ns
Turn-OFF Fall-Time	t_F			80		ns

■ TEST CIRCUITS AND WAVEFORMS



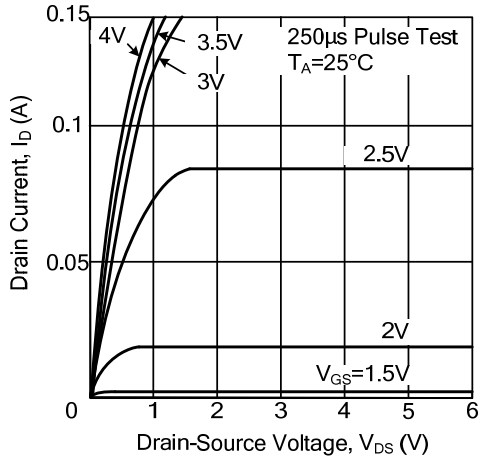
Switching Time Measurement Circuit



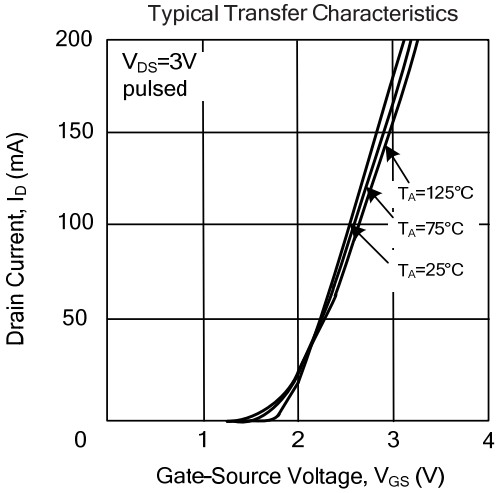
Switching Time Waveforms

■ TYPICAL CHARACTERISTICS

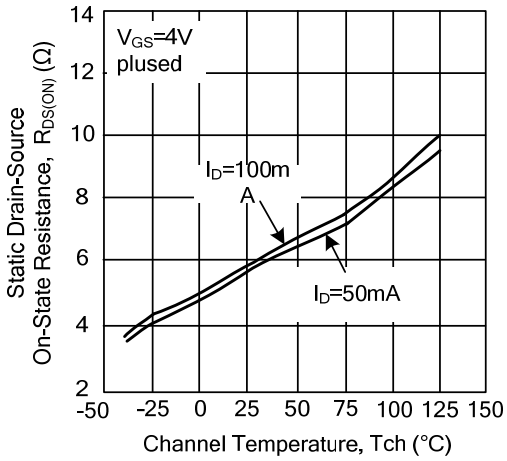
On-Region Characteristics



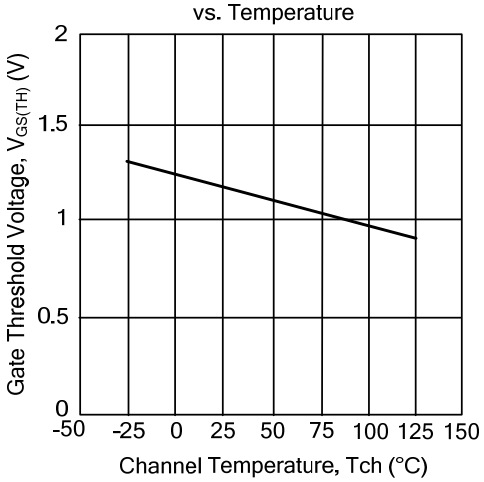
Typical Transfer Characteristics



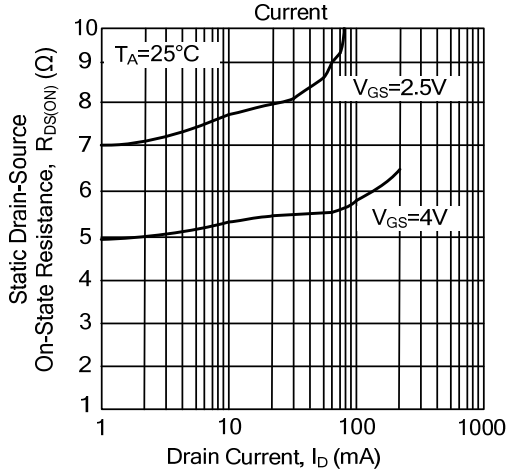
Static Drain-Source On-State Resistance vs. Temperature



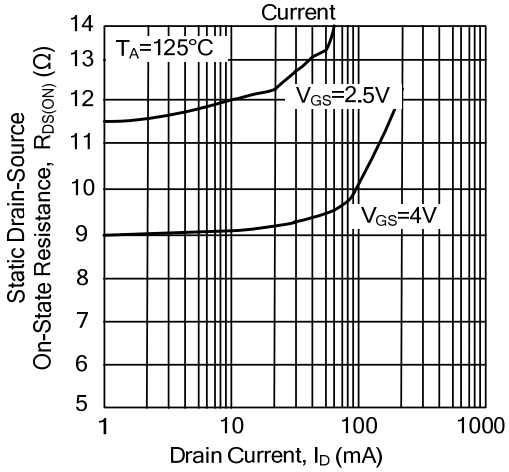
Gate Threshold Voltage vs. Temperature



Static Drain-Source On-State Resistance vs. Drain Current



Static Drain-Source On-State Resistance vs. Drain Current



■ TYPICAL CHARACTERISTICS (Cont.)