



# UK3568

*Power MOSFET*

## SILICON N-CHANNEL MOS TYPE

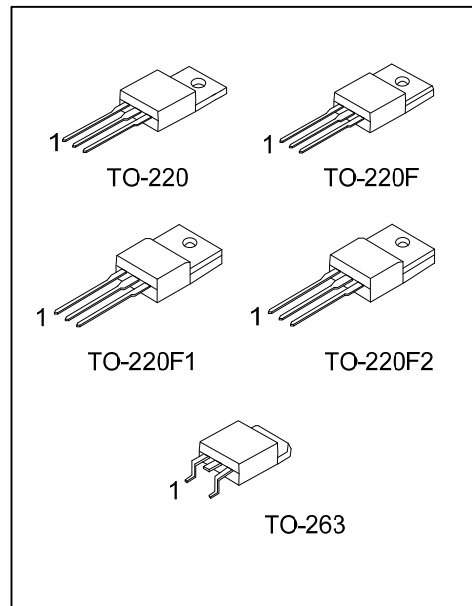
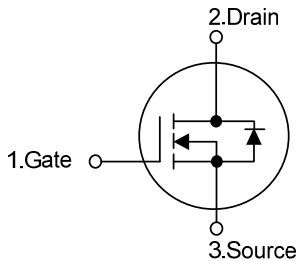
### DESCRIPTION

The **UK3568** uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

### FEATURES

- \*  $R_{DS(ON)} \leq 0.52 \Omega @ V_{GS}=10V, I_D=6.0A$
- \* Low Capacitance
- \* Low Gate Charge
- \* Fast Switching Capability
- \* Avalanche Energy Specified

### SYMBOL



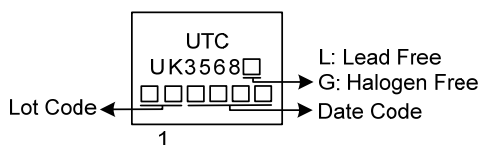
### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UK3568L-TF1-T	UK3568G-TF1-T	TO-220F1	G	D	S	Tube
UK3568L-TF2-T	UK3568G-TF2-T	TO-220F2	G	D	S	Tube
UK3568L-TF3-T	UK3568G-TF3-T	TO-220F	G	D	S	Tube

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

<p>UK3568G-TF1-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) T: Tube</p> <p>(2) TF1: TO-220F1, TF2: TO-220F2, TF3: TO-220F</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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### MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		$V_{DSS}$	500	V
Drain-Gate Voltage ( $R_G=20k\Omega$ )		$V_{DGR}$	500	V
Gate-Source Voltage		$V_{GSS}$	$\pm 30$	V
Continuous Drain Current (Note 2)	DC	$I_D$	12	A
	Pulse( $t=1\text{ms}$ )		48	
Avalanche Current		$I_{AR}$	12	A
Avalanche Energy	Single Pulsed (Note 3)	$E_{AS}$	364	mJ
	Repetitive (Note 4)	$E_{AR}$	4	
Power Dissipation ( $T_C=25^\circ\text{C}$ )	TO-220/TO-263	$P_D$	185	W
	TO-220F/TO-220F1		40	W
	TO-220F2		42	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. Ensure that the temperature will not exceed  $150^\circ\text{C}$ .

3.  $V_{DD}=90\text{V}$ ,  $T_{CH}=25^\circ\text{C}$ (initial),  $L=4.3\text{mH}$ ,  $I_{AR}=12\text{A}$ ,  $R_G=25\Omega$ .

4. Repetitive Rating: Pulse width limited by maximum junction temperature.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient		$\theta_{JA}$	62.5	$^\circ\text{C}/\text{W}$
Junction to Case	TO-220/TO-263	$\theta_{JC}$	0.675	$^\circ\text{C}/\text{W}$
	TO-220F/TO-220F1		3.125	$^\circ\text{C}/\text{W}$
	TO-220F2		2.98	$^\circ\text{C}/\text{W}$

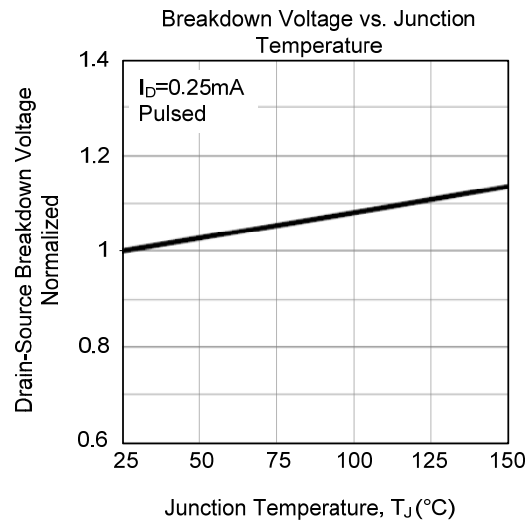
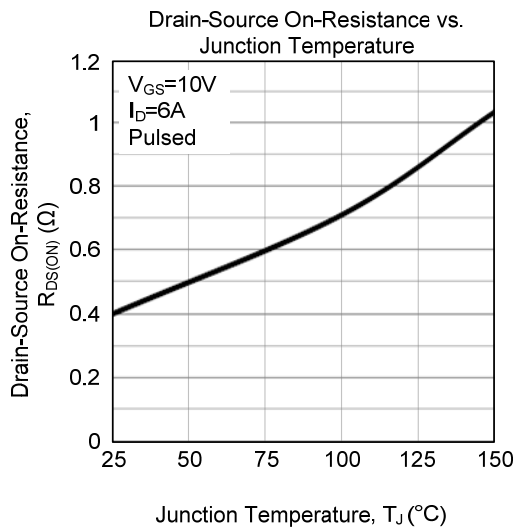
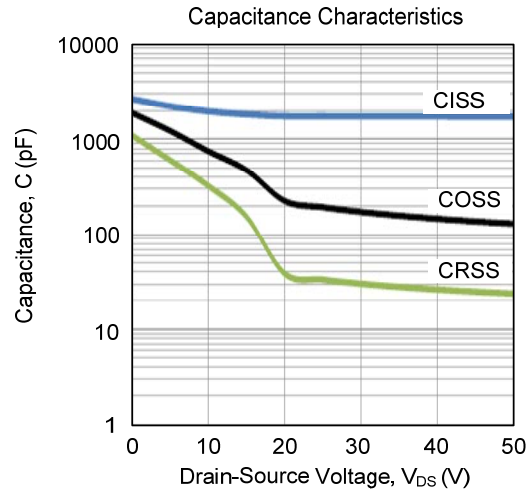
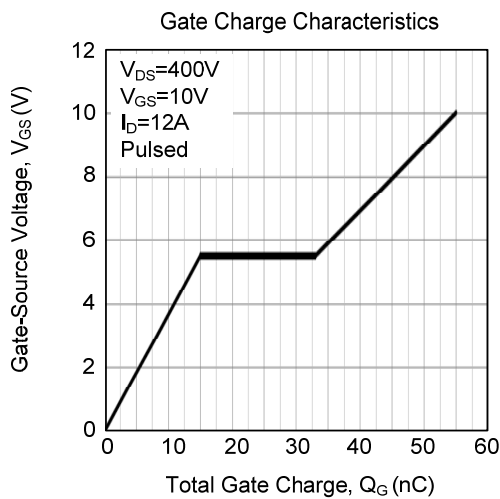
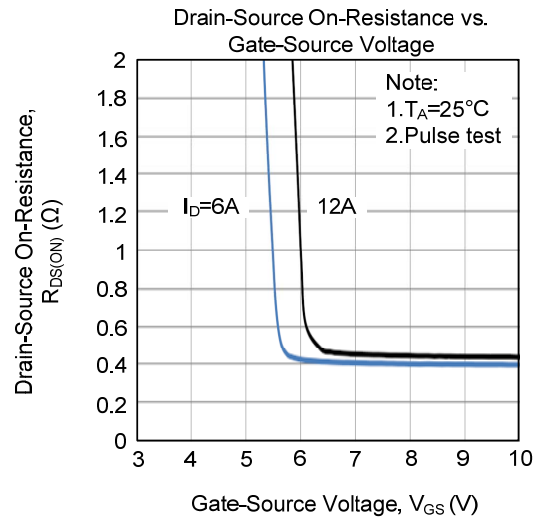
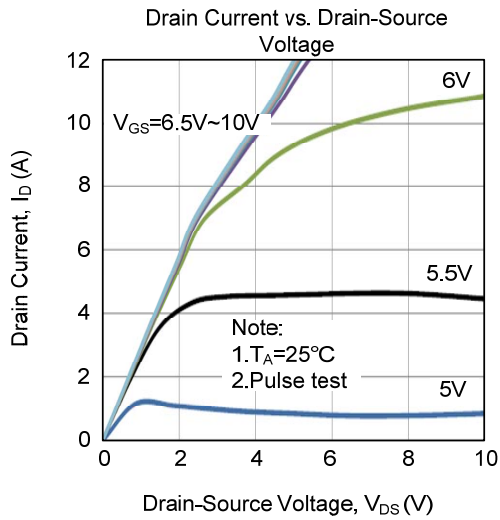
■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	500			V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =500V, V <sub>GS</sub> =0V			100	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> = ±30V			±100	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =250μA	2.0		4.0	V
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =6A		0.4	0.52	Ω
<b>DYNAMIC PARAMETERS</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz		1700		pF
Output Capacitance	C <sub>OSS</sub>			200		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			38		pF
<b>SWITCHING PARAMETERS</b>						
Total Gate Charge	Q <sub>G</sub>	V <sub>DD</sub> =400V, V <sub>GS</sub> =10V, I <sub>D</sub> =12A		56		nC
Gate Source Charge	Q <sub>GS</sub>			15		nC
Gate Drain Charge	Q <sub>GD</sub>			18		nC
Turn-ON Delay Time	t <sub>D(ON)</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> =100V, I <sub>D</sub> =12A, R <sub>G</sub> =25Ω		24		ns
Turn-ON Rise Time	t <sub>R</sub>			28		ns
Turn-OFF Delay Time	t <sub>D(OFF)</sub>			150		ns
Turn-OFF Fall-Time	t <sub>F</sub>			42		ns
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>						
Maximum Continuous Drain-Source Diode Forward Current	I <sub>S</sub>				12	A
Maximum Pulsed Drain-Source Diode Forward Current	I <sub>SM</sub>				48	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =12A, V <sub>GS</sub> =0V			1.7	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>S</sub> =12A, V <sub>GS</sub> =0V, dI/dt=100A/μs		360		ns
Reverse Recovery Charge	Q <sub>rr</sub>			5		μC

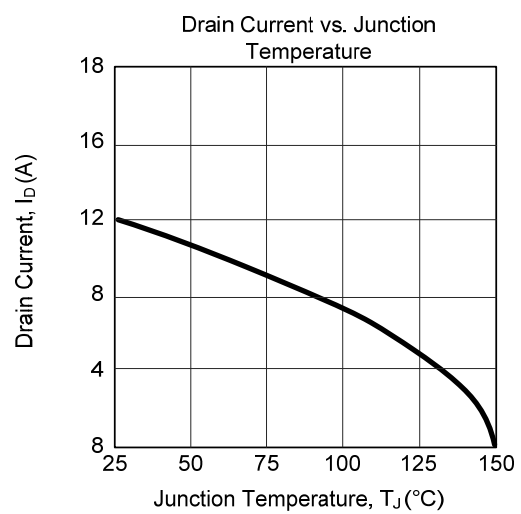
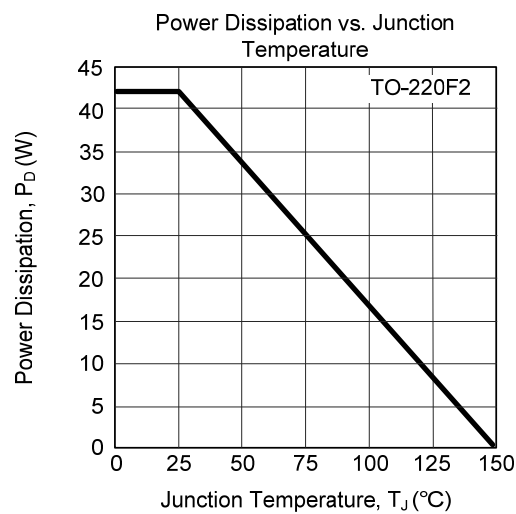
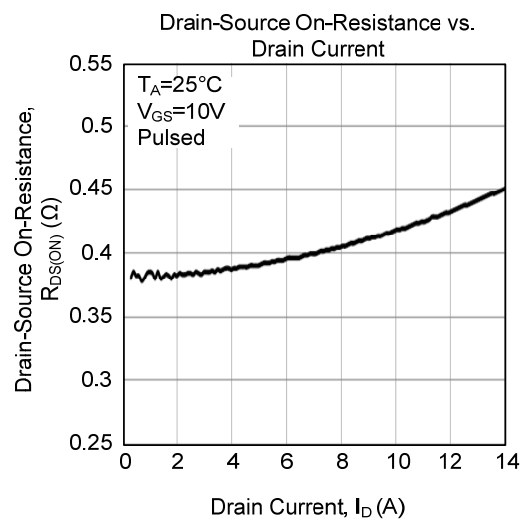
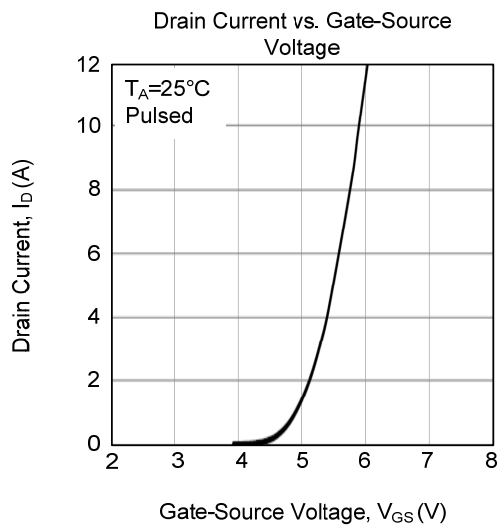
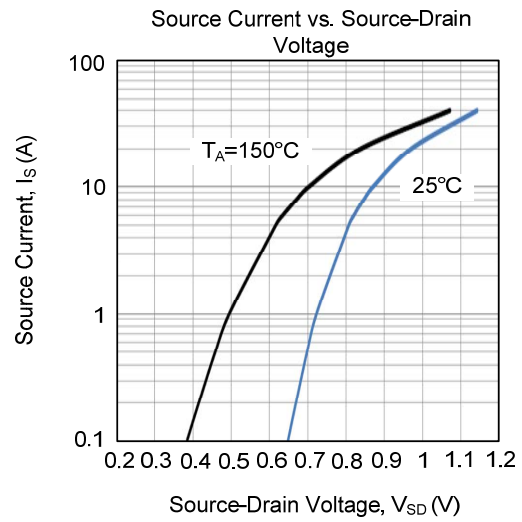
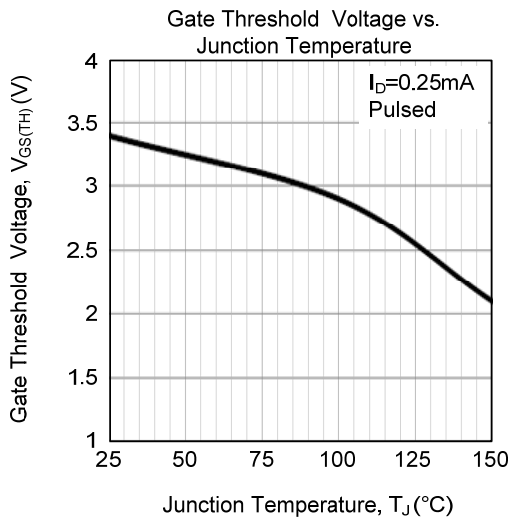
Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.

2. Essentially independent of operating temperature.

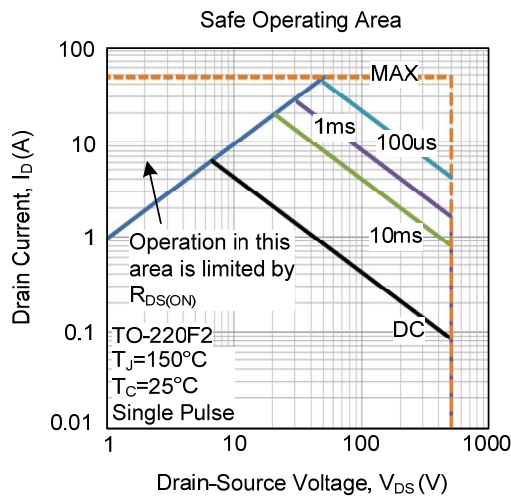
■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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