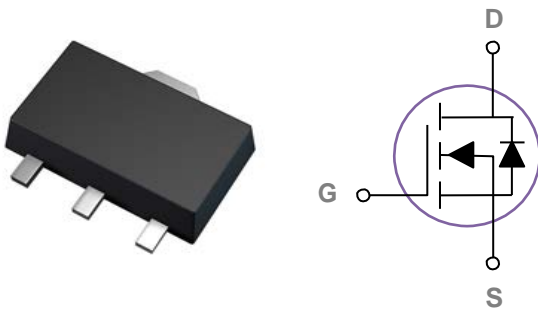


General Description

The KSE4018 is the high cell density trenched N-ch MOSFET, which provides excellent $R_{DS(on)}$ and efficiency for most of the small power switching and load switch applications.

The KSE4018 meet the RoHS and Green Product requirement with full function reliability approved.

SOT89 Pin Configuration



Product Summary

V_{DS} (V)	$R_{DS(on)}$ (m Ω)	I_D (A)
40	18 at $V_{GS} = 10$ V	7.6
	22 at $V_{GS} = 4.5$ V	3.5

Features

- Super Low Gate Charge
- Excellent Cdv/dt effect decline
- Excellent package for good heat dissipation

Applications

- Power switching application
- industrial power supplies
- LED backlighting

100% UIS TESTED!
100% ΔV_{ds} TESTED!

Absolute Maximum Ratings $T_c=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current – Continuous ($T_c=25^\circ\text{C}$)	7.6	A
	Drain Current – Continuous ($T_c=100^\circ\text{C}$)	3.0	A
I_{DM}	Drain Current – Pulsed ¹	36	A
P_D	Power Dissipation ($T_c=25^\circ\text{C}$)	4.0	W
	Power Dissipation – Derate above 25°C	0.5	W/ $^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	71	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	22.4	$^\circ\text{C/W}$

40V N-Channel MOSFET

Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted) Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	40	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BV_{DSS} Temperature Coefficient	Reference to 25°C , $I_D=1\text{mA}$	---	0.01	---	$V/^\circ\text{C}$
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=40V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	μA
		$V_{DS}=40V, V_{GS}=0V, T_J=125^\circ\text{C}$	---	---	10	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=5.4A$	---	18	22	$m\Omega$
		$V_{GS}=4.5V, I_D=3.5A$	---	22	27	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1.0	1.5	2.4	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	1.6	---	$mV/^\circ\text{C}$
g_{fs}	Forward Transconductance	$V_{DS}=10V, I_S=5A$	---	15	---	S

Dynamic and switching Characteristics

Q_g	Total Gate Charge ^{2, 3}	$V_{DS}=15V, V_{GS}=10V, I_D=3A$	---	9.3	16	nC
Q_{gs}	Gate-Source Charge ^{2, 3}		---	1.9	4.3	
Q_{gd}	Gate-Drain Charge ^{2, 3}		---	2.7	4.6	
$T_{d(on)}$	Turn-On Delay Time ^{2, 3}	$V_{DS}=15V, V_{GS}=10V, R_G=3.0\Omega, I_D=3A$	---	3.2	6	ns
T_r	Rise Time ^{2, 3}		---	26.4	37	
$T_{d(off)}$	Turn-Off Delay Time ^{2, 3}		---	18.6	31	
T_f	Fall Time ^{2, 3}		---	6.2	15	
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, F=1\text{MHz}$	---	880	1027	pF
C_{oss}	Output Capacitance		---	87	107	
C_{riss}	Reverse Transfer Capacitance		---	60	81	

Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	7.6	A
I_{SM}	Pulsed Source Current		---	---	30	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_S=1A, T_J=25^\circ\text{C}$	---	---	1.2	V

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

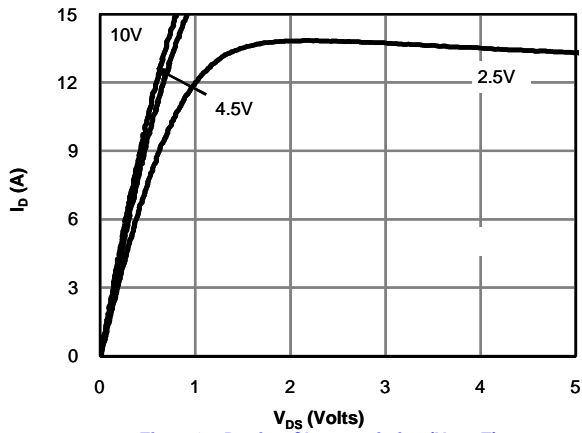


Fig 1: On-Region Characteristics (Note E)

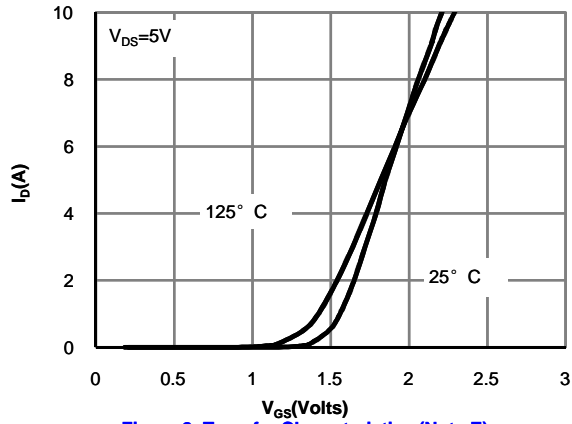


Figure 2: Transfer Characteristics (Note E)

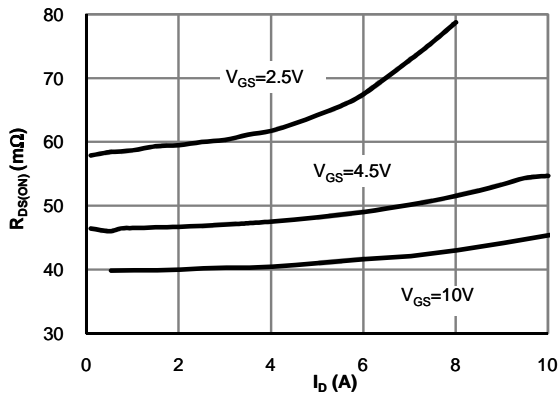


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

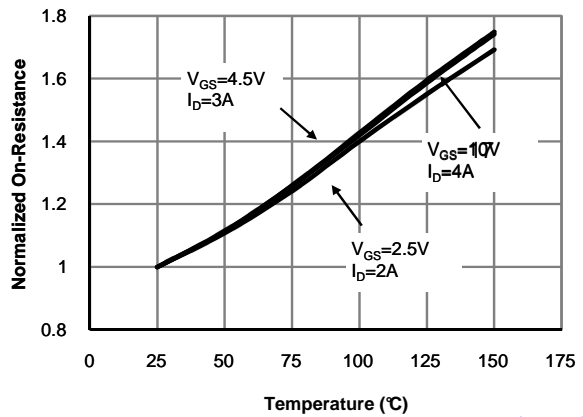


Figure 4: On-Resistance vs. Junction Temperature (Note E)

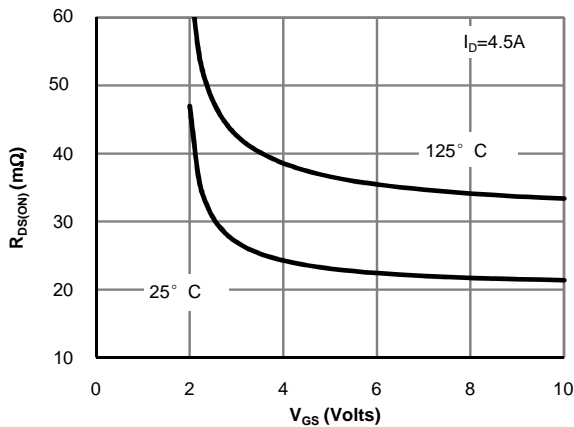


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

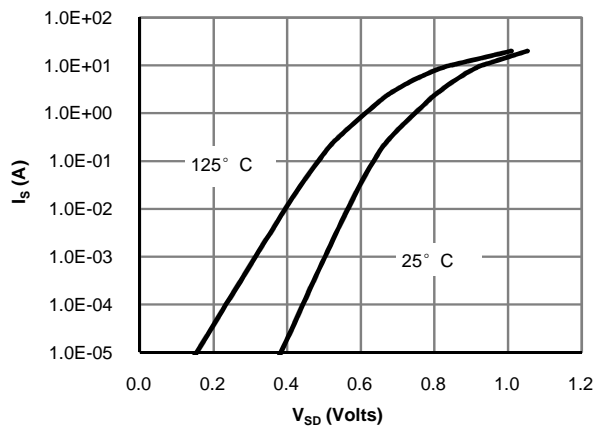


Figure 6: Body-Diode Characteristics (Note E)

40V N-Channel MOSFET

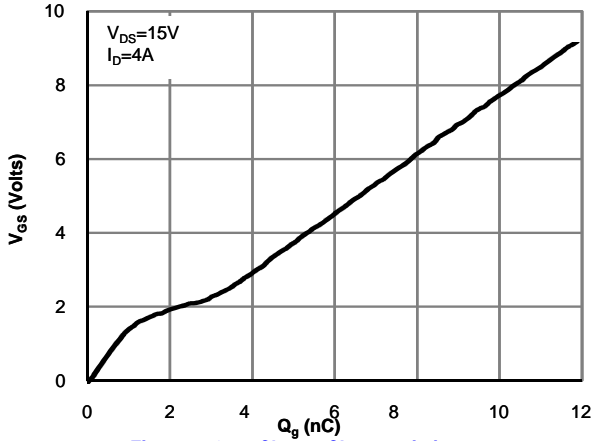


Figure 7: Gate-Charge Characteristics

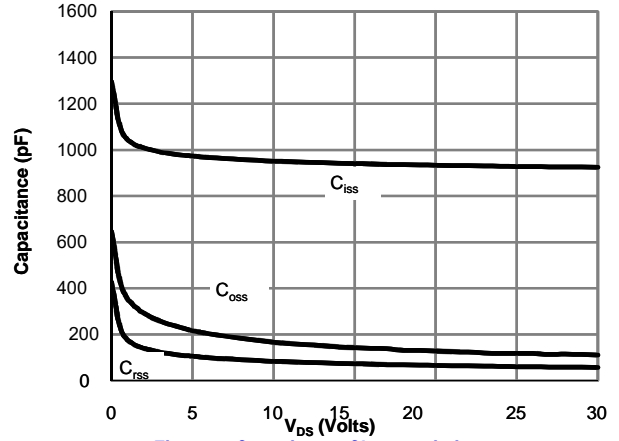


Figure 8: Capacitance Characteristics

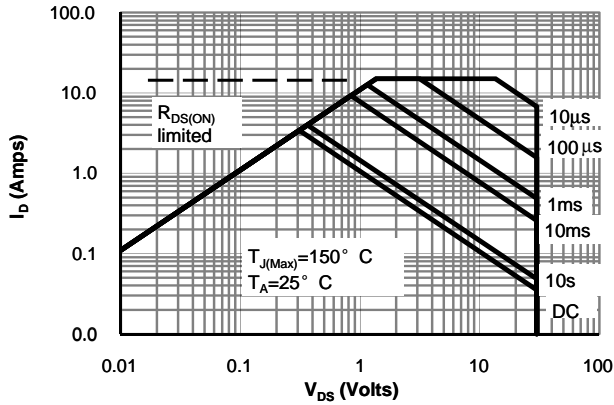


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

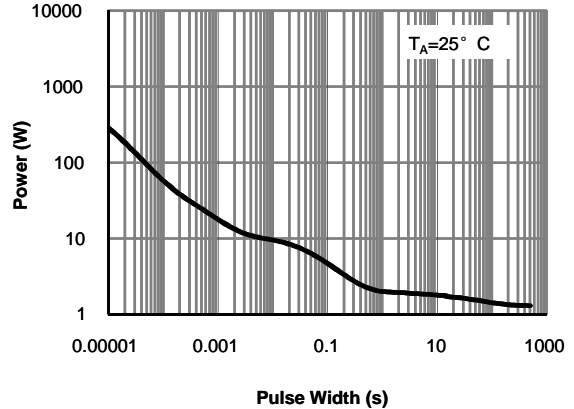


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

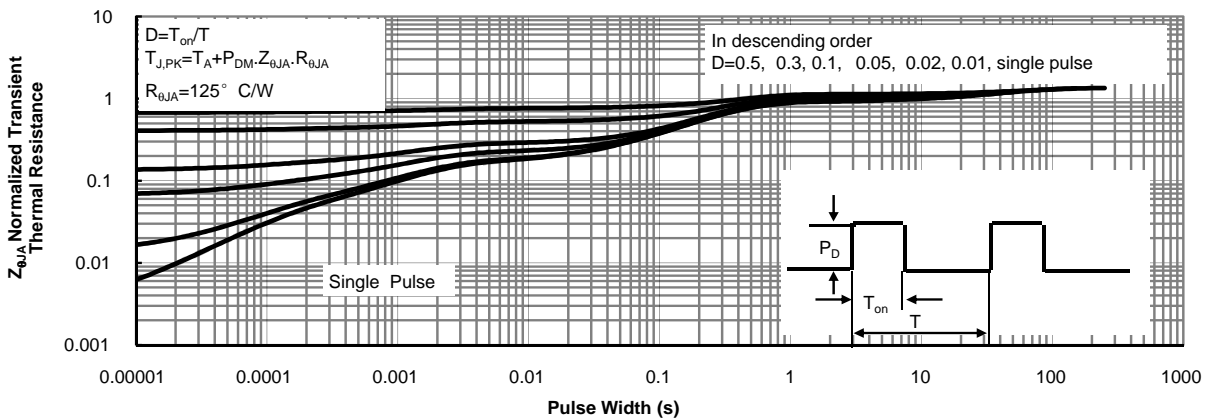


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

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