

### General Description

The KSP1008 uses advanced MOSFET technology to provide excellent  $R_{DS(ON)}$ , low gate charge fast switching and excellent avalanche characteristics. This device is specially designed to get better ruggedness and suitable to use in

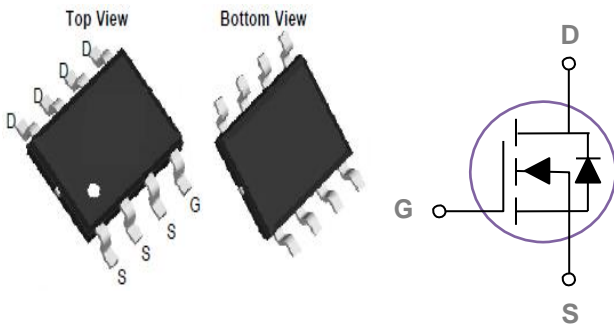
### Product Summary

$V_{DS}$ (V)	$R_{DS(on)}$ (m $\Omega$ )	$I_D$ (A)
100	9.8 at $V_{GS} = 10$ V	12
	14 at $V_{GS} = 4.5$ V	8.6

### Features

- Extremely low switching loss
- Green Device Available
- Excellent stability and uniformity or Invertors

### SOP8 Pin Configuration



### Applications

- Power Management
- PWM applications
- Uninterruptible power supply
- Synchronous-rectification

**100% UIS TESTED!**  
**100%  $\Delta V_{ds}$  TESTED!**

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

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	100	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Drain Current – Continuous ( $T_c=25^\circ\text{C}$ )	12	A
	Drain Current – Continuous ( $T_c=100^\circ\text{C}$ )	8.5	A
$I_{DM}$	Drain Current – Pulsed <sup>1</sup>	44	A
$P_D$	Power Dissipation ( $T_c=25^\circ\text{C}$ )	2.7	W
	Power Dissipation – Derate above $25^\circ\text{C}$	0.08	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	---	52	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	2.17	$^\circ\text{C}/\text{W}$

### 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	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	$BV_{DSS}$ Temperature Coefficient	Reference to $25^\circ\text{C}$ , $I_D=1\text{mA}$	---	0.01	---	$V/^\circ\text{C}$
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=50V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	$\mu A$
		$V_{DS}=50V, V_{GS}=0V, T_J=125^\circ\text{C}$	---	---	10	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA

### On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=8A$	---	9.8	12.6	$m\Omega$
		$V_{GS}=4.5V, I_D=5.5A$	---	14	16.5	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	2.0	3.0	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	1.8	---	$mV/^\circ\text{C}$
$g_{fs}$	Forward Transconductance	$V_{DS}=10V, I_S=2A$	---	20	---	S

### Dynamic and switching Characteristics

$Q_g$	Total Gate Charge <sup>2, 3</sup>	$V_{DS}=50V, V_{GS}=10V, I_D=10A$	---	22	34	nC
$Q_{gs}$	Gate-Source Charge <sup>2, 3</sup>		---	7.4	11.6	
$Q_{gd}$	Gate-Drain Charge <sup>2, 3</sup>		---	3.8	6.5	
$T_{d(on)}$	Turn-On Delay Time <sup>2, 3</sup>	$V_{DS}=50V, V_{GS}=10V, R_G=3.3\Omega, I_D=10A$	---	8.5	12	ns
$T_r$	Rise Time <sup>2, 3</sup>		---	3.2	6	
$T_{d(off)}$	Turn-Off Delay Time <sup>2, 3</sup>		---	20.6	30	
$T_f$	Fall Time <sup>2, 3</sup>		---	4.0	6.3	
$C_{iss}$	Input Capacitance	$V_{DS}=50V, V_{GS}=0V, F=1\text{MHz}$	---	1743	2140	pF
$C_{oss}$	Output Capacitance		---	685	834	
$C_{riss}$	Reverse Transfer Capacitance		---	24	60	

### 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	---	---	3.6	A
$I_{SM}$	Pulsed Source Current		---	---	40	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.

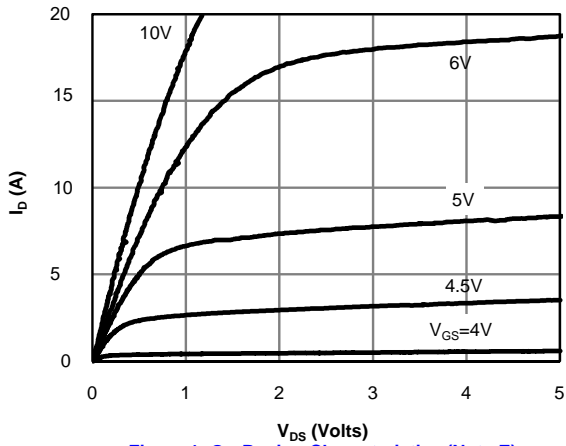


Figure 1: On-Region Characteristics (Note E)

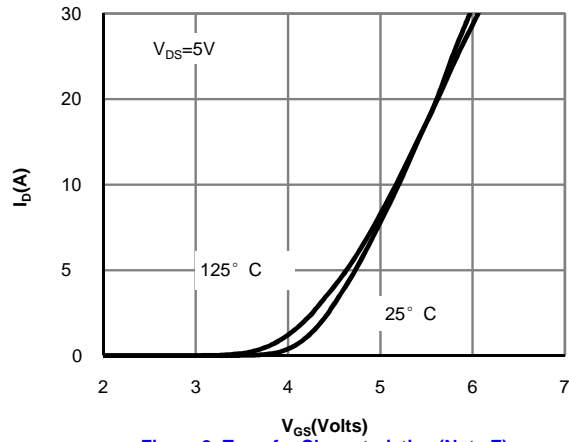


Figure 2: Transfer Characteristics (Note E)

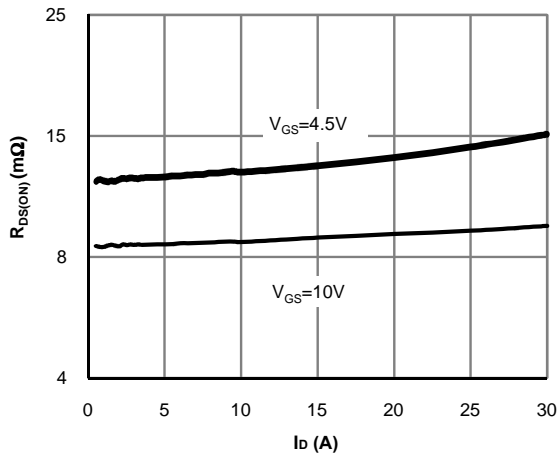


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

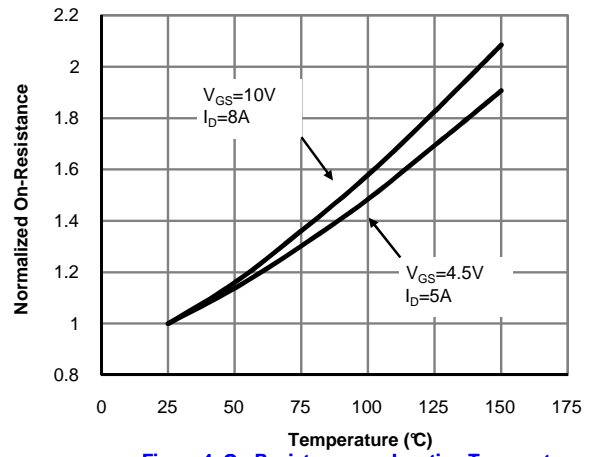


Figure 4: On-Resistance vs. Junction Temperature (Note E)

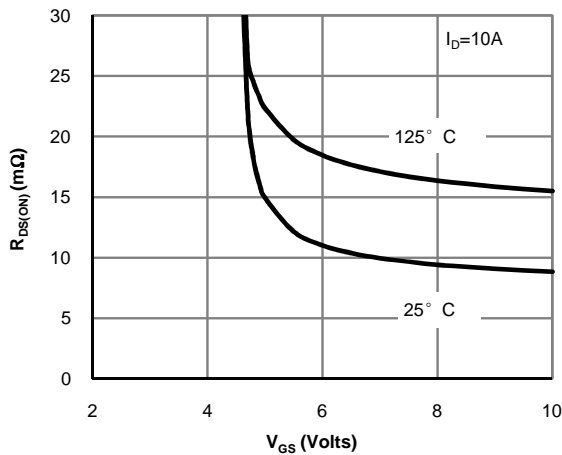


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

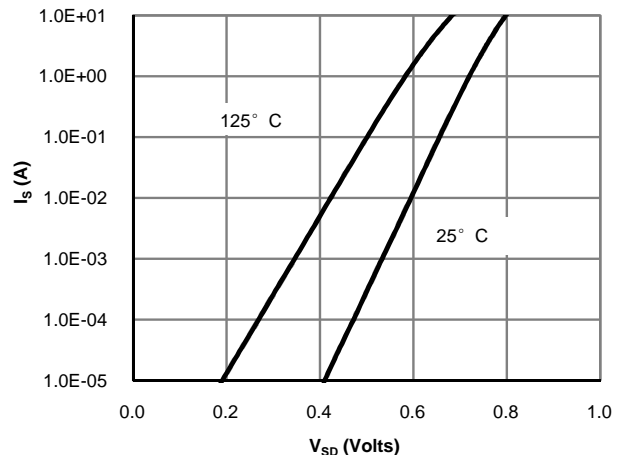


Figure 6: Body-Diode Characteristics (Note E)

**100V N-Channel MOSFET**

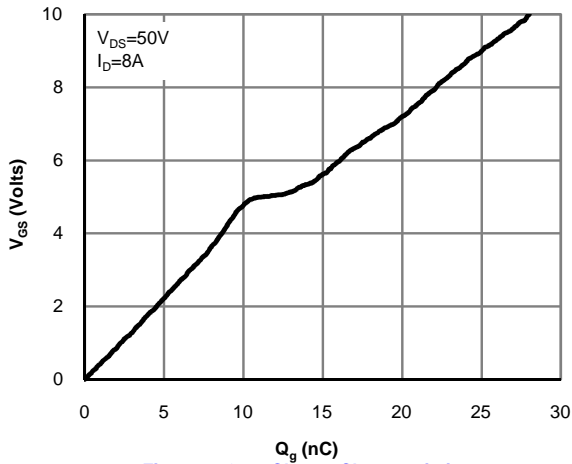


Figure 7: Gate-Charge Characteristics

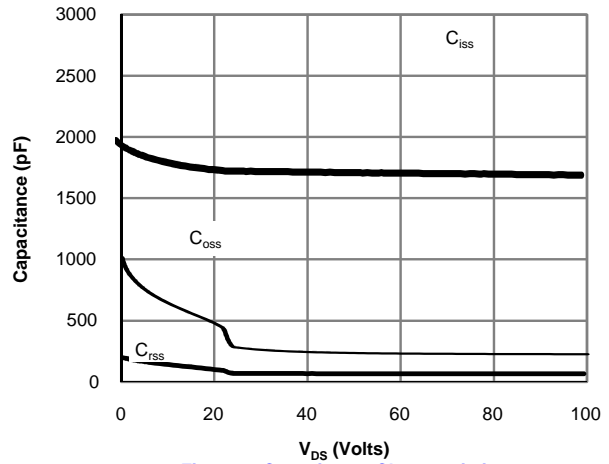


Figure 8: Capacitance Characteristics

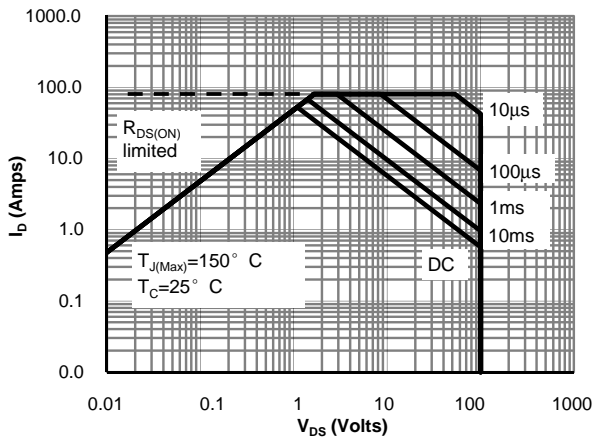


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

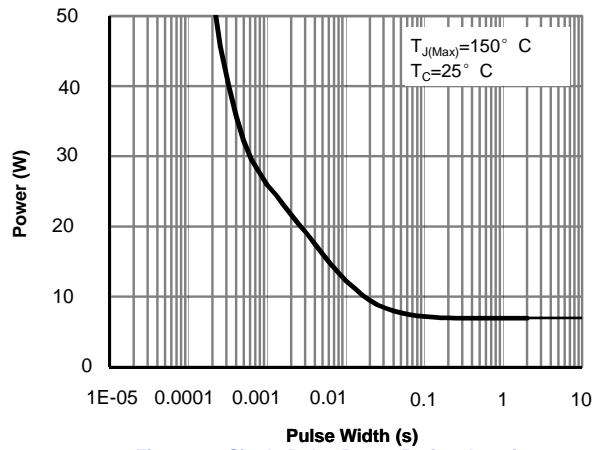


Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)

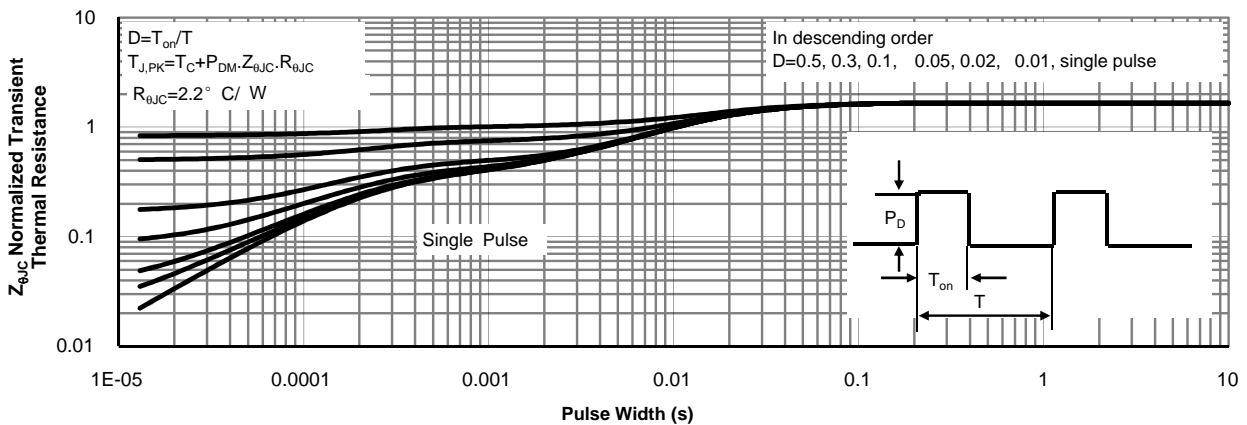


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

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