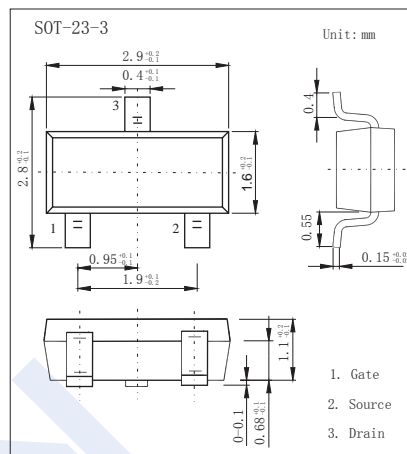
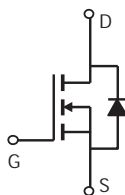


## N-Channel Enhancement MOSFET

## 2KK5007DS

## ■ Features

- $V_{DS} (V) = 30V$
- $I_D = 4 A$
- $R_{DS(ON)} < 55m\Omega$  ( $V_{GS} = 10V$ )
- $R_{DS(ON)} < 70m\Omega$  ( $V_{GS} = 4.5V$ )
- $R_{DS(ON)} < 110m\Omega$  ( $V_{GS} = 2.5V$ )

■ Absolute Maximum Ratings  $T_a = 25^\circ C$ 

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current	$I_D$	$T_A=25^\circ C$	4
		$T_A=70^\circ C$	3.4
Pulsed Drain Current	$I_{DM}$	15	A
Power Dissipation	$P_D$	$T_A=25^\circ C$	1.4
		$T_A=70^\circ C$	1
Thermal Resistance.Junction-to-Ambient	$R_{\theta JA}$	125	$^\circ C/W$
Thermal Resistance.Junction-to-Case	$R_{\theta JC}$	80	$^\circ C/W$
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ C$

## 2KK5007DS

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V <sub>DSS</sub>	I <sub>D</sub> =250 μ A, V <sub>GS</sub> =0V	30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V			1	μ A
		V <sub>DS</sub> =24V, V <sub>GS</sub> =0V, T <sub>J</sub> =55°C			5	
Gate-Body leakage current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =250 μ A	0.6	1	1.4	V
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =4A		45	55	mΩ
		V <sub>GS</sub> =10V, I <sub>D</sub> =4A T <sub>J</sub> =125°C		66	80	
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =3A		55	70	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =2A		83	110	mΩ
On state drain current	I <sub>D(ON)</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =5V	10			A
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =4A		8		S
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =15V, f=1MHz		390		pF
Output Capacitance	C <sub>oss</sub>		54.5		pF	
Reverse Transfer Capacitance	C <sub>rss</sub>		41		pF	
Gate resistance	R <sub>g</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz		3		Ω
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =15V, I <sub>D</sub> =-4A		4.34		nC
Gate Source Charge	Q <sub>gs</sub>		0.6		nC	
Gate Drain Charge	Q <sub>gd</sub>		1.38		nC	
Turn-On DelayTime	t <sub>D(on)</sub>			3.3		ns
Turn-On Rise Time	t <sub>r</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, R <sub>L</sub> =3.75 Ω, R <sub>GEN</sub> =6 Ω		1		ns
Turn-Off DelayTime	t <sub>D(off)</sub>			21.7		ns
Turn-Off Fall Time	t <sub>f</sub>			2.1		ns
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =4A, di/dt=100A/μ s		12		ns
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>F</sub> =4A, di/dt=100A/μ s		6.3		nC
Maximum Body-Diode Continuous Current	I <sub>S</sub>				2.5	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =1A, V <sub>GS</sub> =0V		0.8	1	V

## ■ Marking

Marking	KA7
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# 2KK5007DS

## Typical Characteristics

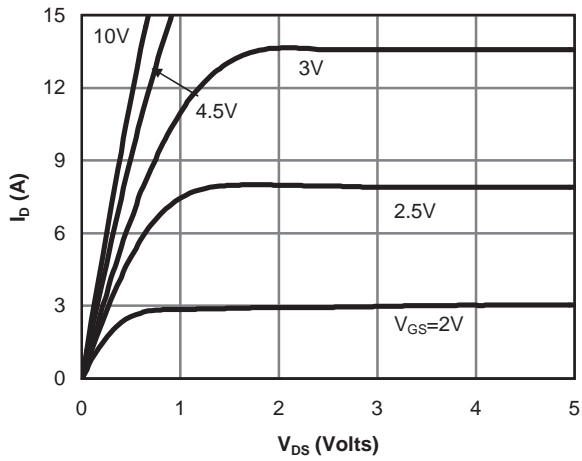


Fig 1: On-Region Characteristics

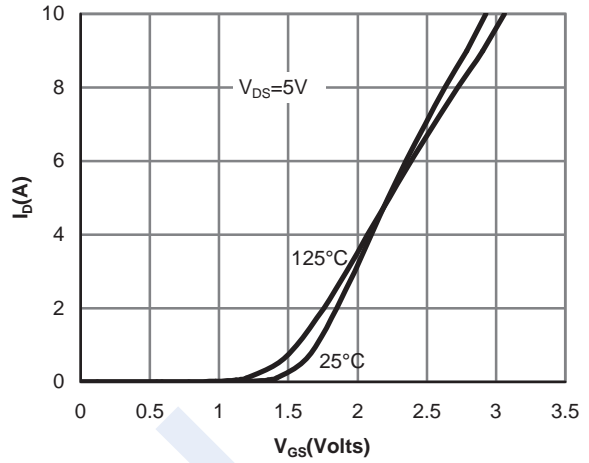


Figure 2: Transfer Characteristics

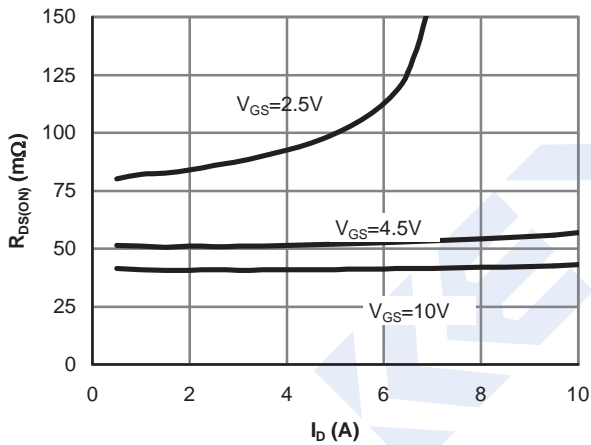


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

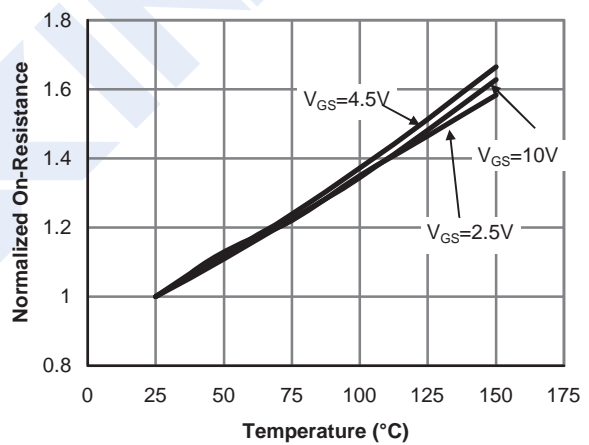


Figure 4: On-Resistance vs. Junction Temperature

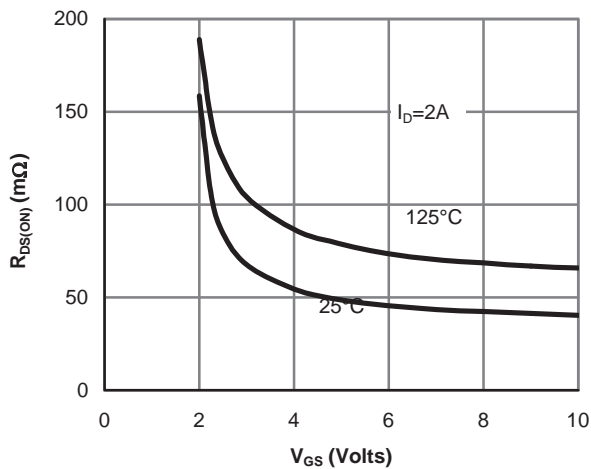


Figure 5: On-Resistance vs. Gate-Source Voltage

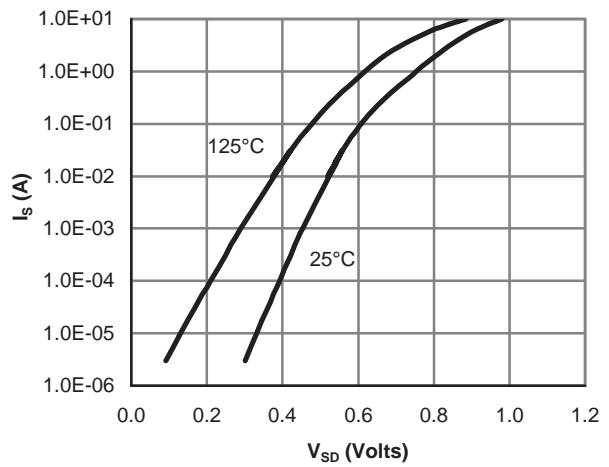


Figure 6: Body-Diode Characteristics

## 2KK5007DS

### ■ Typical Characteristics

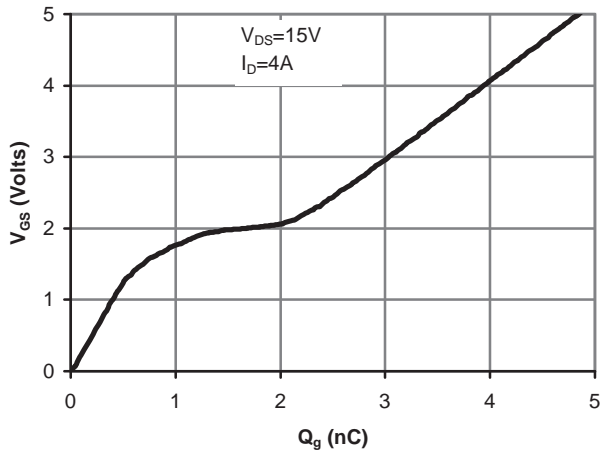


Figure 7: Gate-Charge Characteristics

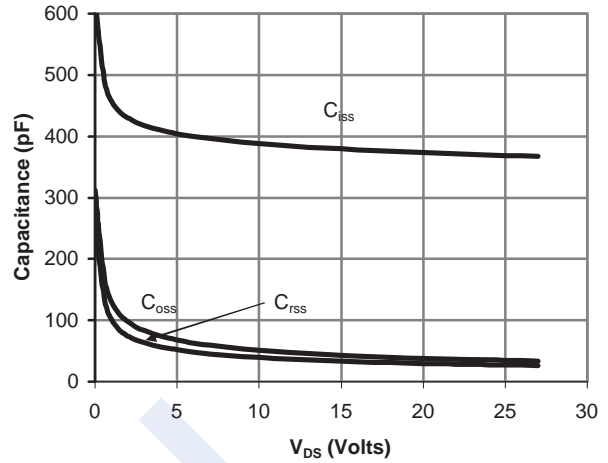


Figure 8: Capacitance Characteristics

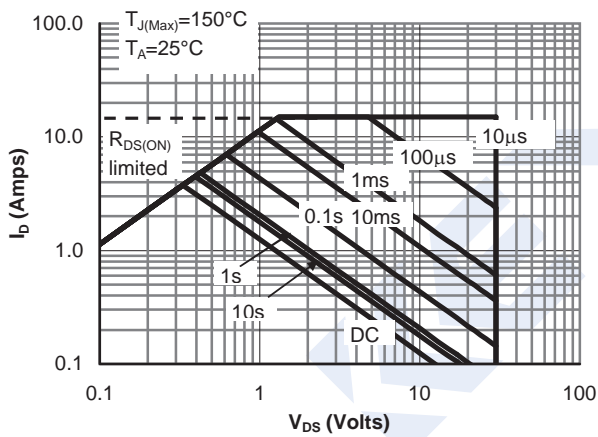


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

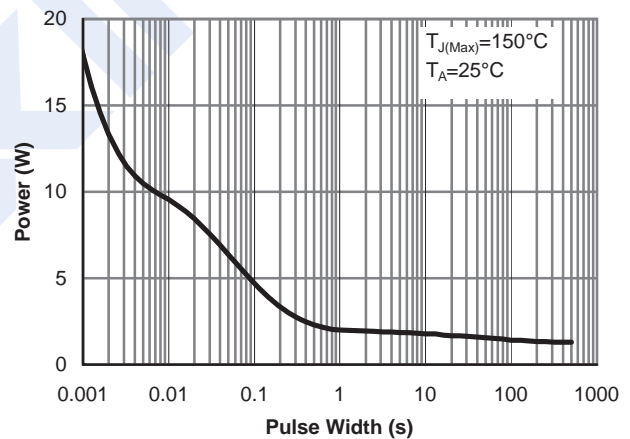


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

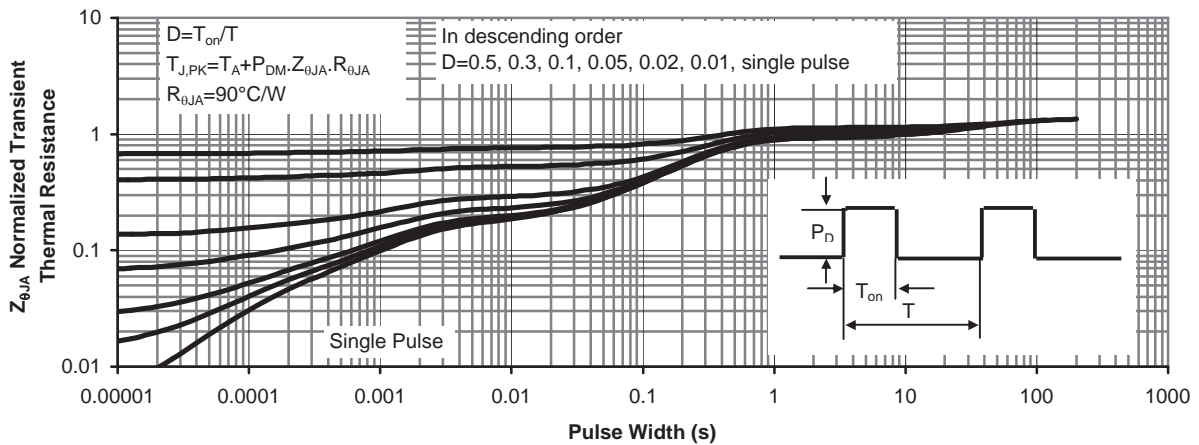


Figure 11: Normalized Maximum Transient Thermal Impedance