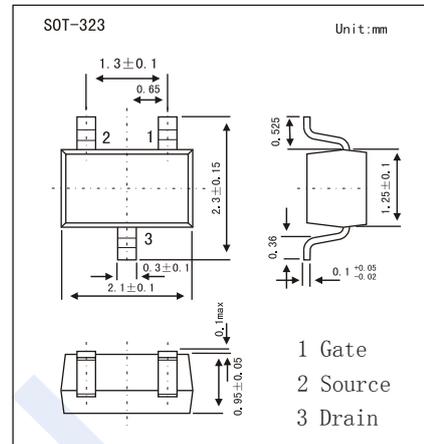
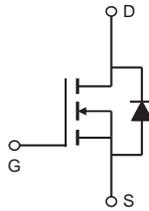


## N-Channel MOSFET

### 2KK5044

#### ■ Features

- $V_{DS}$  (V) = 20V
- $I_D$  = 2.1 A ( $V_{GS}$  = 10V)
- $R_{DS(ON)}$  < 55m $\Omega$  ( $V_{GS}$  = 10V)
- $R_{DS(ON)}$  < 65m $\Omega$  ( $V_{GS}$  = 4.5V)
- $R_{DS(ON)}$  < 85m $\Omega$  ( $V_{GS}$  = 2.5V)



#### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	
Continuous Drain Current	$I_D$	$T_a=25^\circ\text{C}$	A
		$T_a=70^\circ\text{C}$	
Pulsed Drain Current	$I_{DM}$	15	
Power Dissipation	$P_D$	$T_a=25^\circ\text{C}$	W
		$T_a=70^\circ\text{C}$	
Thermal Resistance.Junction- to-Ambient	$R_{thJA}$	$t \leq 10s$	$^\circ\text{C/W}$
		Steady-State	
Thermal Resistance.Junction- to-Case	$R_{thJC}$	320	
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to 150	

## N-Channel MOSFET

### 2KK5044

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Drain-Source Breakdown Voltage	V <sub>DSS</sub>	I <sub>D</sub> =250 μ A, V <sub>GS</sub> =0V	20			V	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V			1	μA	
		V <sub>DS</sub> =20V, 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	0.5	1	1.5	V	
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =2.1A			55	mΩ	
		V <sub>GS</sub> =10V, I <sub>D</sub> =2.1A T <sub>J</sub> =125°C			84		
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =1.5A			65		
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =1A			85		
On State Drain Current	I <sub>D(on)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =5V	15			A	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =2.1A		14		S	
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =15V, f=1MHz		235		pF	
Output Capacitance	C <sub>oss</sub>			35			
Reverse Transfer Capacitance	C <sub>rss</sub>			18			
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz		4.3		Ω	
Total Gate Charge (10V)	Q <sub>g</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, I <sub>D</sub> =2.1A		10		nC	
Total Gate Charge (4.5V)				4.7			
Gate Source Charge			Q <sub>gs</sub>		0.95		
Gate Drain Charge			Q <sub>gd</sub>		1.6		
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, R <sub>L</sub> =8 Ω, R <sub>GEN</sub> =3 Ω		3.5		ns	
Turn-On Rise Time	t <sub>r</sub>			1.5			
Turn-Off DelayTime	t <sub>d(off)</sub>			17.5			
Turn-Off Fall Time	t <sub>f</sub>			2.5			
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 2.1A, di/dt= 100A/μ s		8.5	11	nA	
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>			2.6	3.5		
Maximum Body-Diode Continuous Current	I <sub>S</sub>				1.5	A	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =1A, V <sub>GS</sub> =0V			1	V	

## N-Channel MOSFET 2KK5044

■ Typical Characteristics

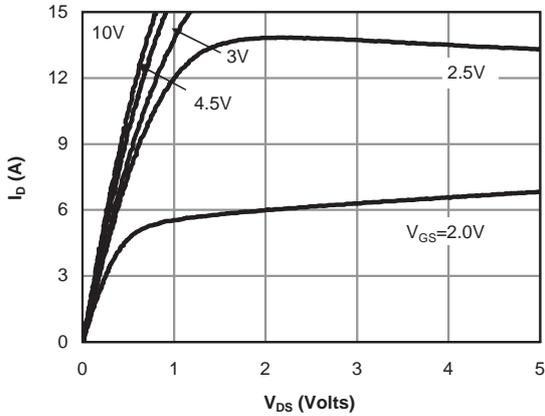


Fig 1: On-Region Characteristics

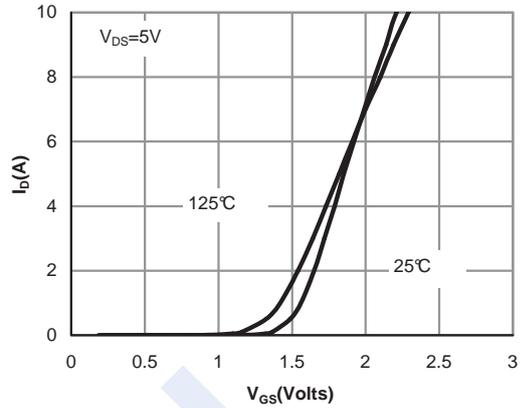


Figure 2: Transfer Characteristics

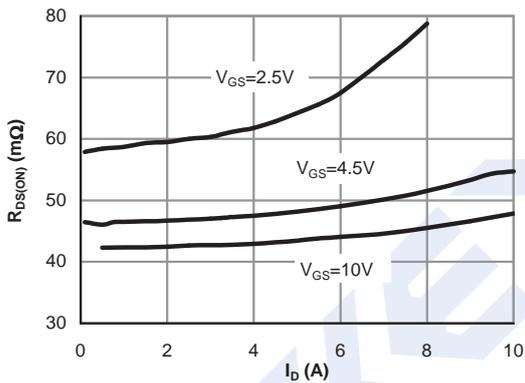


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

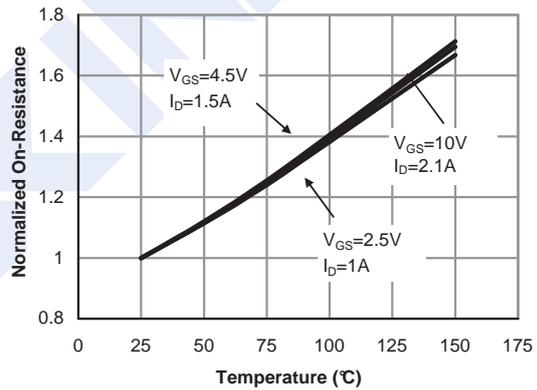


Figure 4: On-Resistance vs. Junction Temperature

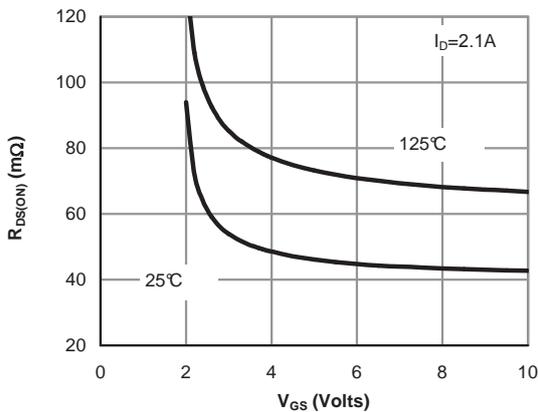


Figure 5: On-Resistance vs. Gate-Source Voltage

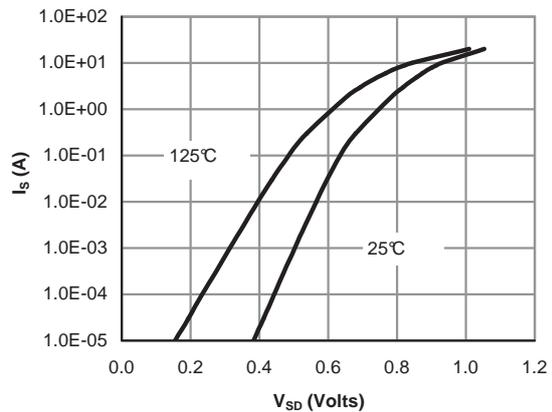


Figure 6: Body-Diode Characteristics

## N-Channel MOSFET 2KK5044

■ Typical Characteristics

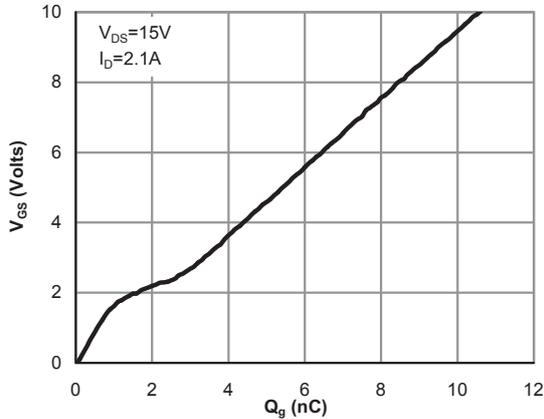


Figure 7: Gate-Charge Characteristics

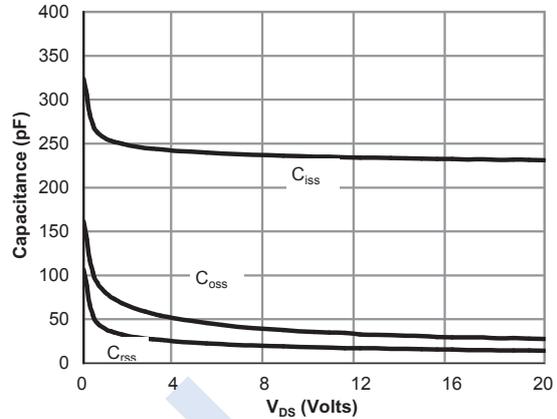


Figure 8: Capacitance Characteristics

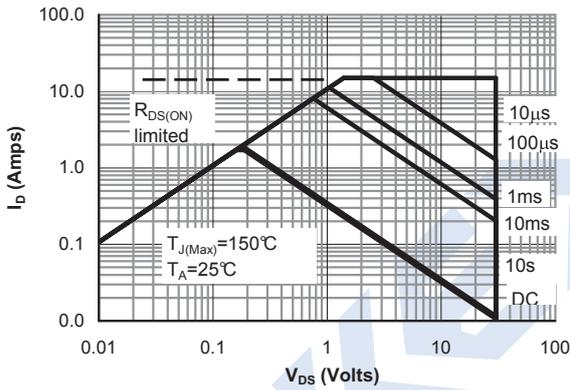


Figure 9: Maximum Forward Biased Safe Operating Area

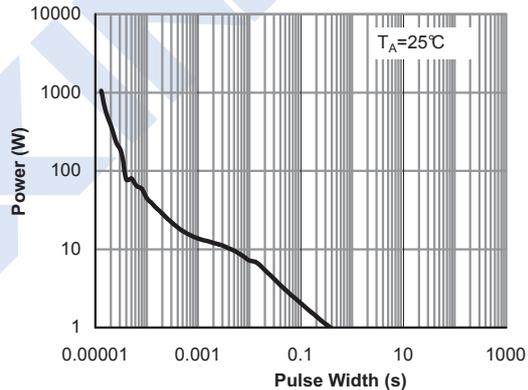


Figure 10: Single Pulse Power Rating Junction-to-Ambient

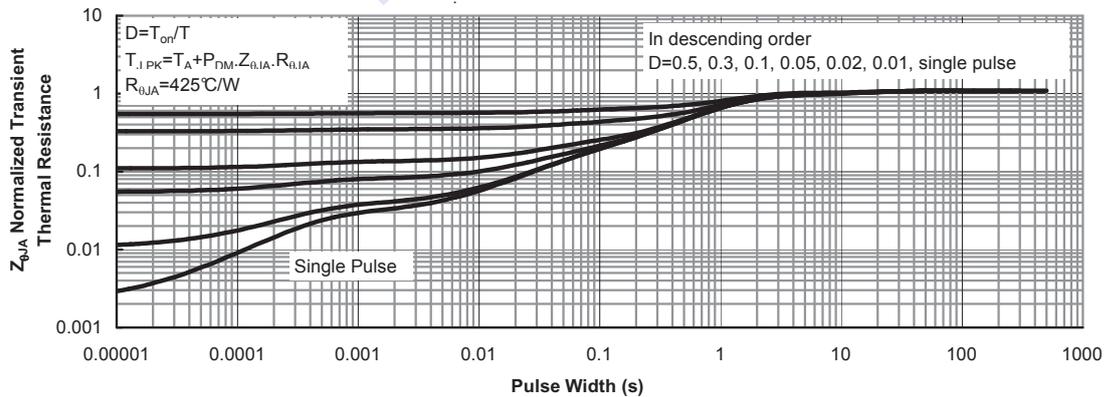


Figure 11: Normalized Maximum Transient Thermal Impedance