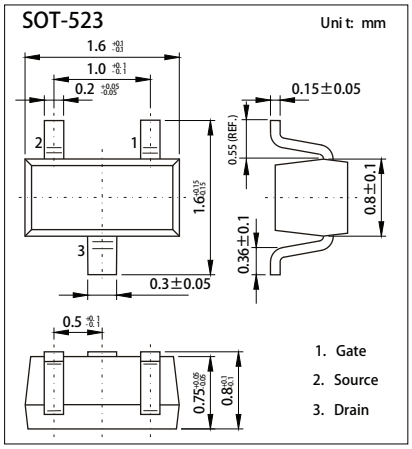
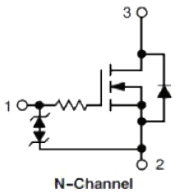
N-Channel MOSFET

2KK5016



■ Features

- V_{DS} = 20 V
- I_D = 238 mA
- R_{dson} = 1.5Ω@Vgs=4.5V (Typ.)
- Low Gate Charge for Fast Switching
- ESD Protected Gate



■ Absolute Maximum Ratings (T_A = 25℃)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±10	
Continuous Drain Current (Note 1)	Steady State = 25℃	I_D	238	mA
Pulsed Drain Current	t_P ≤10μs	I_{DM}	714	
Power Dissipation (Note 1)	Steady State = 25℃	P_D	300	mW
Thermal Resistance, Junction- to-Ambient (Note 1)		$R_{\theta JA}$	416	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

Note 1: Surface-mounted on FR4 board using 1 in sq. pad size (Cu area = 1.127 in sq. [1 oz] including traces).

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■ Electrical Characteristics (T_A = 25℃, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=100μA, V_{GS}=0V	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±10V			±100	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=3V , I_D=100μA	0.5		1.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=10mA		1.5	3.0	Ω
		V_{GS}=2.5V, I_D=10mA		2.0	3.5	
Forward Transconductance	g_{FS}	V_{DS}=3V,I_D=10mA		80		mS
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=5V, f=1MHz		11.5	20	pF
Output Capacitance	C_{oss}			10	15	
Reverse Transfer Capacitance	C_{rss}			3.5	6.0	
Turn-On DelayTime	$t_{d(on)}$	V_{GS} = 4.5 V, V_{DS} = 5 V, I_D = 10mA, R_G = 10 Ω		13		ns
Turn-On Rise Time	t_r			15		
Turn-Off DelayTime	$t_{d(off)}$			98		
Turn-Off Fall Time	t_f			60		
Diode Forward Voltage	V_{SD}	I_{SD}=10mA,V_{GS}=0V		0.66	0.80	V

Note 2: Pulse Test: pulse width ≤300 μs, duty cycle≤ 2%.

Note 3: Switching characteristics are independent of operating junction temperatures.

■ Marking

Marking	KN

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■ Typical Characteristics

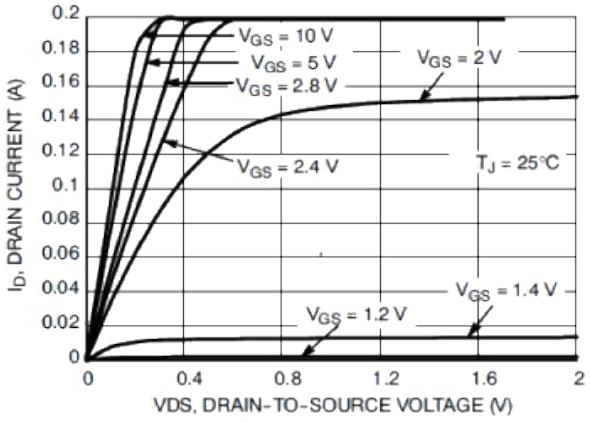

Figure 1. On-region Characteristics

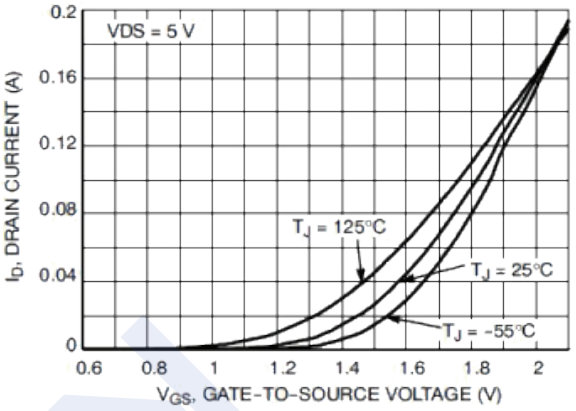

Figure 2. Transfer Characteristics

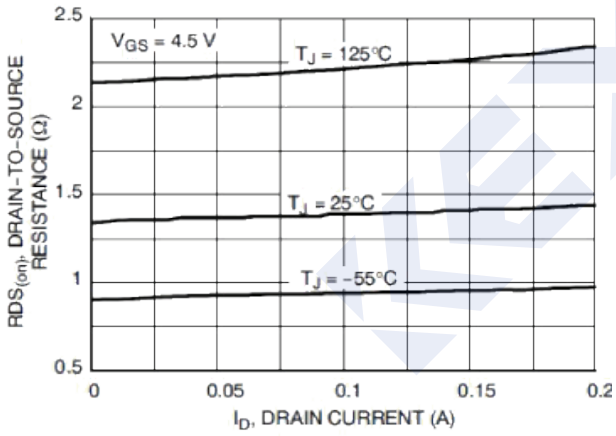

Figure 3. On-resistance versus Drain Current and Temperature

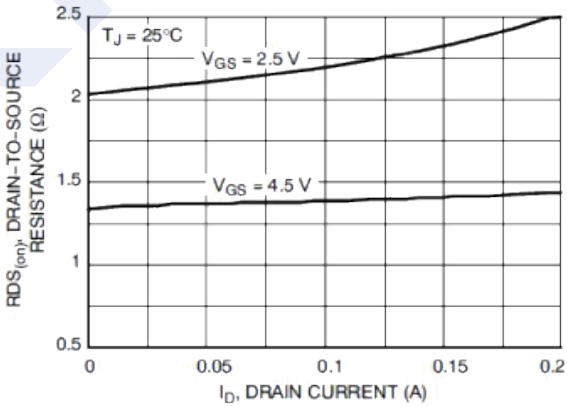

Figure 4. On-resistance versus Drain Current and Gate Voltage

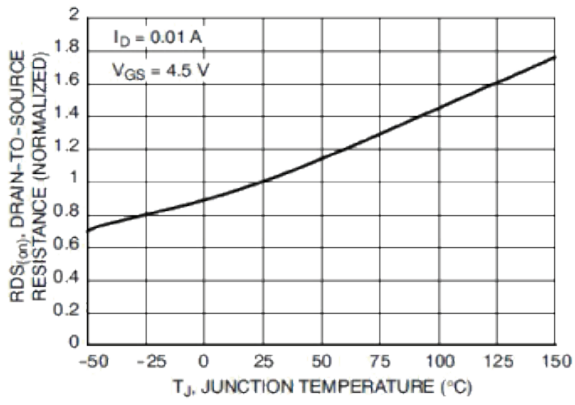

Figure 5. On-resistance Variation with Temperature

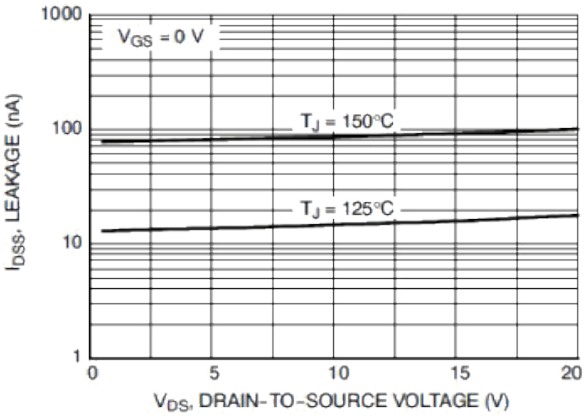

Figure 6. Drain-to-Source Leakage Current versus Voltage

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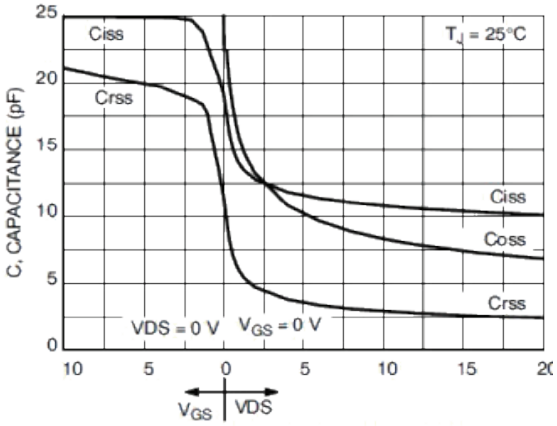

Figure 7. Capacitance Variation

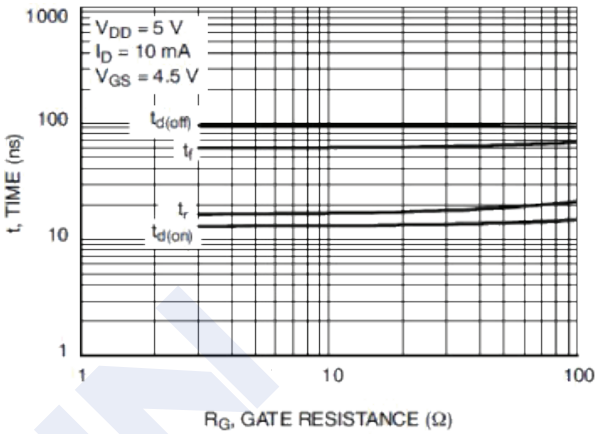

Figure 8. Resistive Switching Time Variation versus Gate Resistance

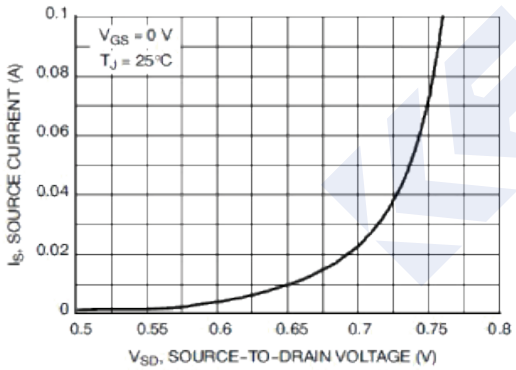

Figure 9. Diode Forward Voltage versus Current