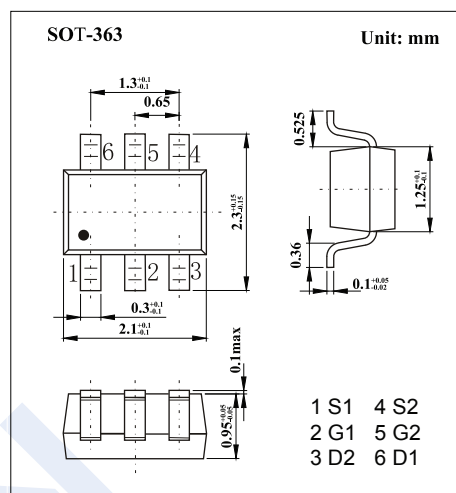
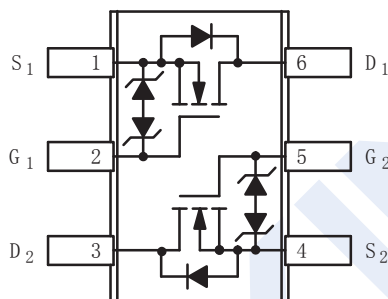


Dual N-channel MOSFET

2KK5077

■ Features

- $BV_{DSS} = 60\text{ V}$
- $I_D = 295\text{ mA}$
- $R_{DS(ON)} \leq 1.8\ \Omega @ V_{GS} = 10\text{ V}$
- $R_{DS(ON)} \leq 2.5\ \Omega @ V_{GS} = 4.5\text{ V}$
- Low $R_{DS(on)}$
- Low Gate Threshold
- Low Input Capacitance
- ESD Protected Gate

■ Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise stated)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	Steady State	295
		$t \leq 5\text{ s}$	304
Pulsed Drain Current	I_{DM}	900	mA
Thermal Resistance, Junction- to-Ambient (Note 1)	$R_{\theta JA}$	467	$^\circ\text{C}/\text{W}$
Gate-Source ESD Rating (HBM)	ESD_{HBM}	2000	V
Gate-Source ESD Rating (MM)	ESD_{MM}	200	V
Power Dissipation	P_D	Steady State	250
		$t \leq 5\text{ s}$	266
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to 150	$^\circ\text{C}$

Note 1. Surface mounted on FR4 board using 1 in sq pad size, (Cu area = 1.127 in sq [2 oz] including traces).

Dual N-channel MOSFET

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■ Electrical Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Drain-Source Breakdown Voltage	BV_{DS}	$I_D = 250\ \mu\text{A}$, $V_{GS} = 0\text{V}$	60			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 60\text{V}$, $V_{GS} = 0\text{V}$			1	μA
		$V_{DS} = 60\text{V}$, $V_{GS} = 0\text{V}$, $T_J = 125^\circ\text{C}$			500	
Gate to Source Leakage Current	I_{GSS}	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 20\text{V}$			± 10	
ON Characteristics (Note 2)						
Gate to Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\ \mu\text{A}$	1.0		2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10\text{V}$, $I_D = 500\text{mA}$			1.8	Ω
		$V_{GS} = 4.5\text{V}$, $I_D = 200\text{mA}$			2.5	
Charges and Capacitances						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = 20\text{V}$, $f = 1\text{MHz}$		26		pF
Output Capacitance	C_{oss}			4.4		
Reverse Transfer Capacitance	C_{rss}			2.5		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = 4.5\text{V}$, $V_{DS} = 25\text{V}$, $I_D = 200\text{mA}$		0.9		nC
Threshold Gate Charge	$Q_{G(TH)}$			0.2		
Gate Source Charge	Q_{gs}			0.3		
Gate Drain Charge	Q_{gd}			0.28		
Switching Characteristics (Note 3)						
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 4.5\text{V}$, $V_{DS} = 25\text{V}$, $I_D = 200\text{mA}$, $R_G = 25\ \Omega$		22		ns
Turn-On Rise Time	t_r			34		
Turn-Off Delay Time	$t_{d(off)}$			34		
Turn-Off Fall Time	t_f			32		
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0\text{V}$, $I_S = 200\text{mA}$		0.8	1.2	V

Notes:

- Pulse Test: pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.
- Switching characteristics are independent of operating junction temperatures.

■ Marking

Marking	KAR
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Dual N-channel MOSFET

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■ Typical Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise specified)

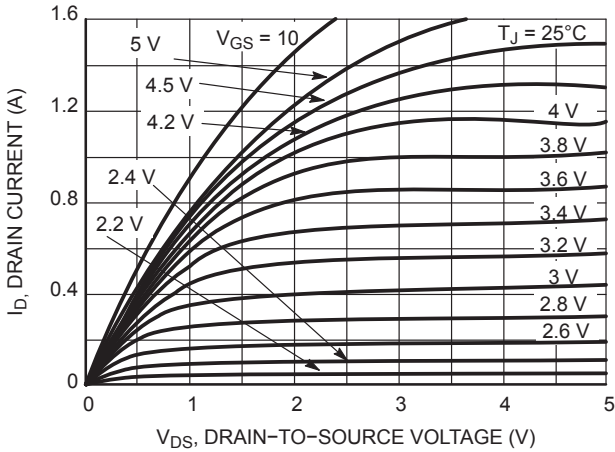


Figure 1. On-Region Characteristics

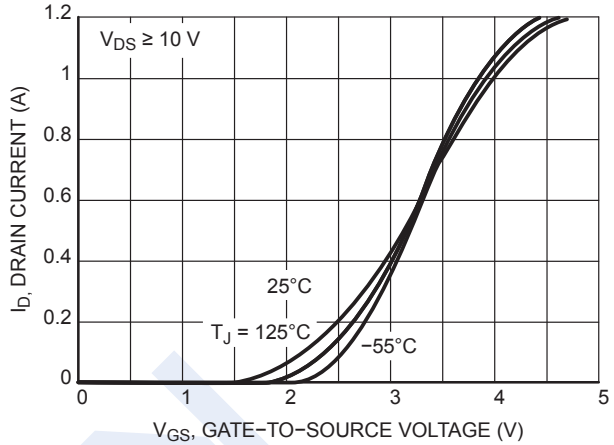


Figure 2. Transfer Characteristics

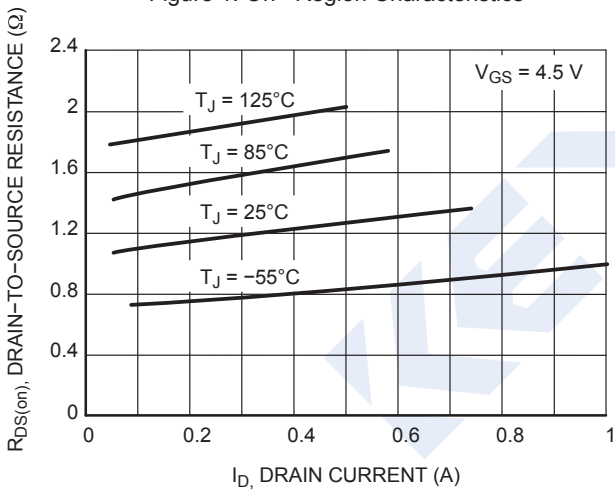


Figure 3. On-Resistance vs. Drain Current and Temperature

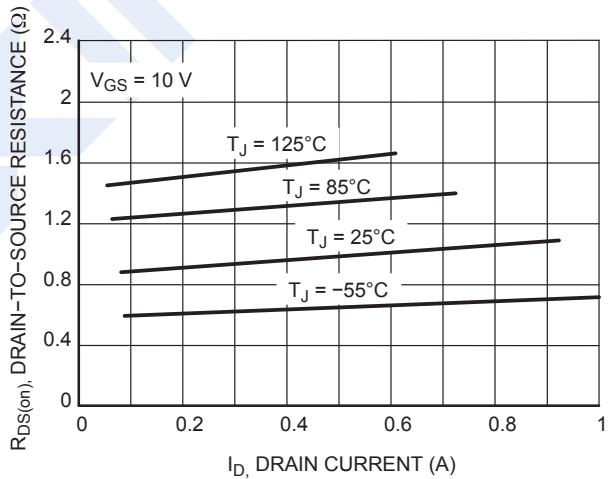


Figure 4. On-Resistance vs. Drain Current and Temperature

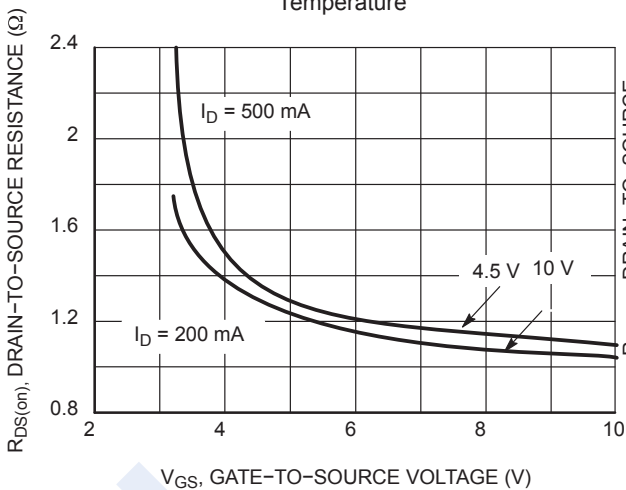


Figure 5. On-Resistance versus Gate-to-Source Voltage

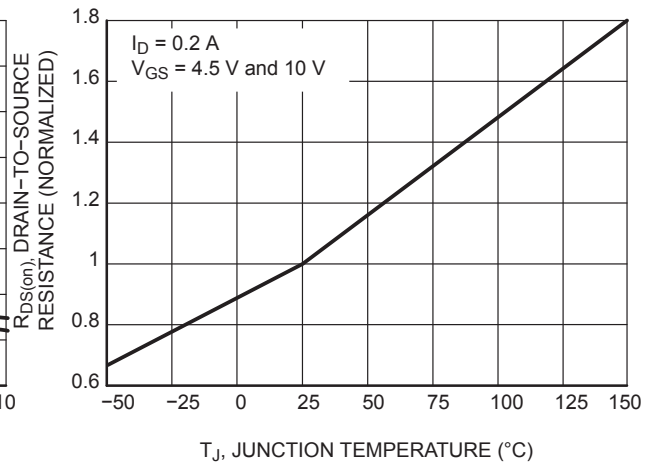


Figure 6. On-Resistance Variation with Temperature

Dual N-channel MOSFET

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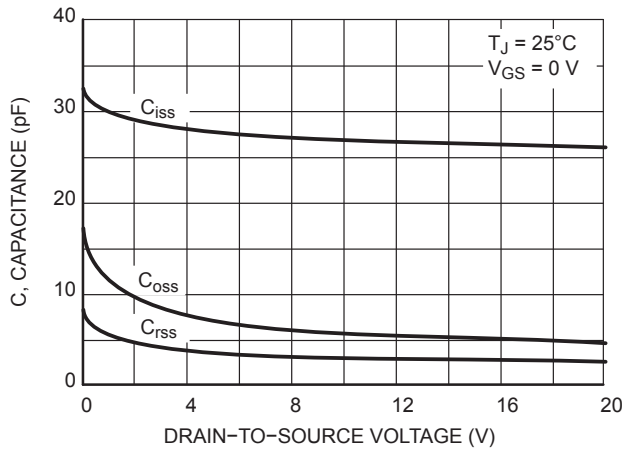


Figure 7. Capacitance Variation

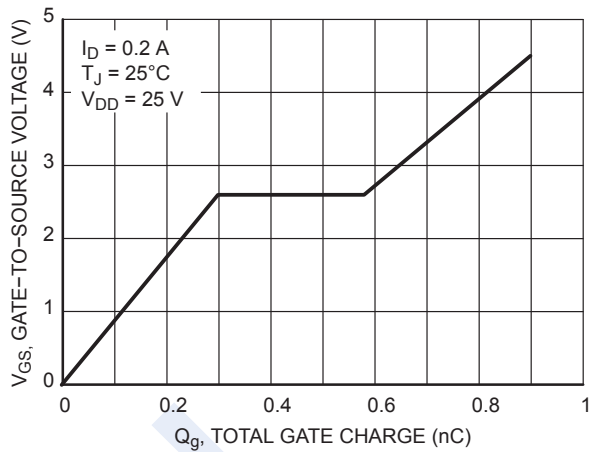


Figure 8. Gate-to-Source and Drain-to-Source Voltage vs. Total Charge

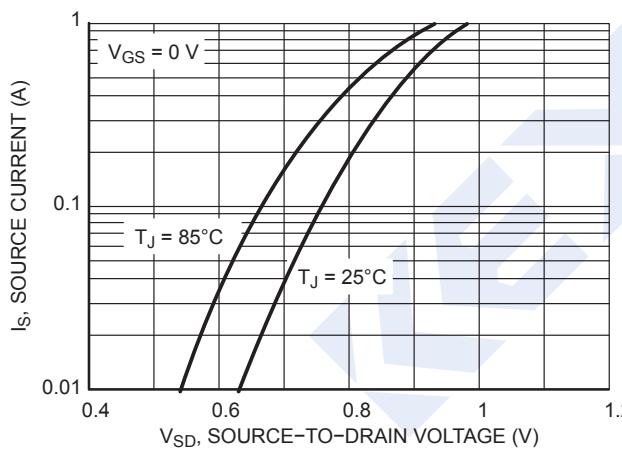


Figure 9. Diode Forward Voltage vs. Current

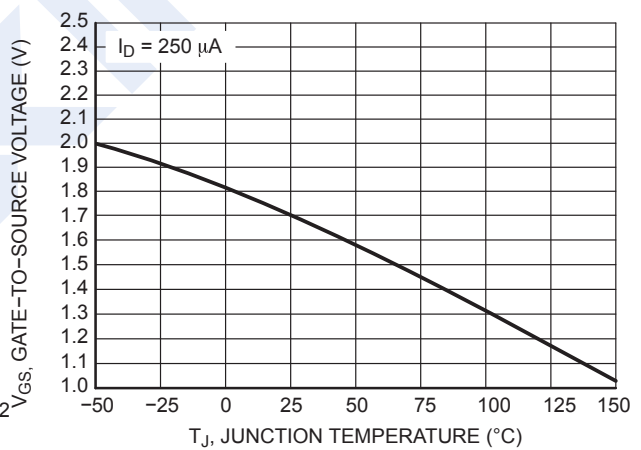


Figure 10. Threshold Voltage with Temperature

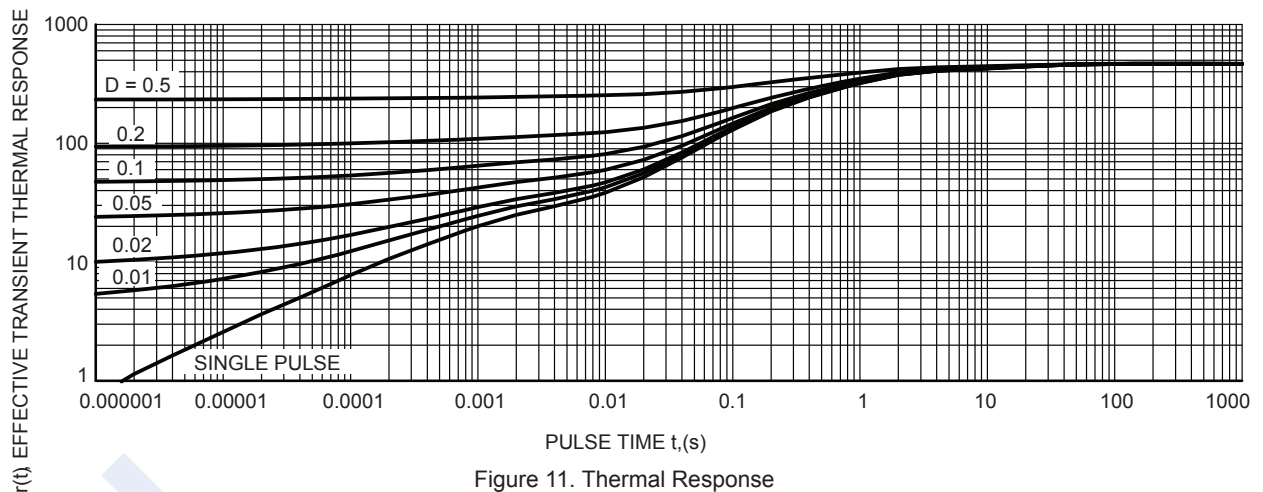


Figure 11. Thermal Response