

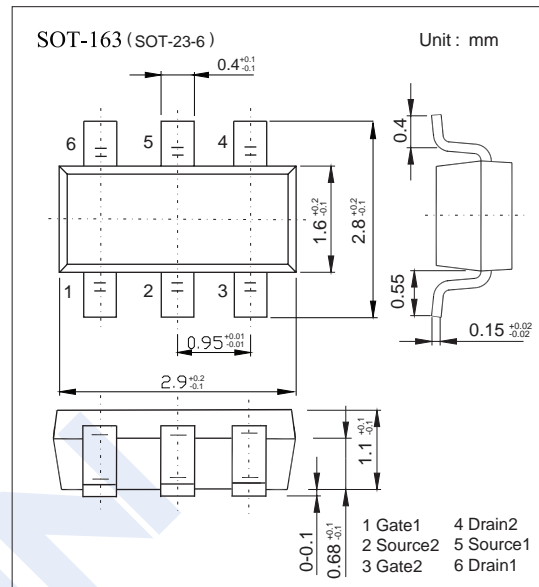
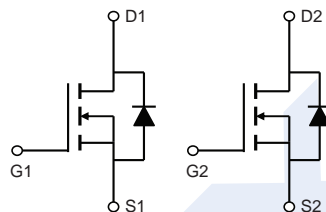
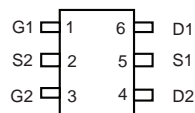
Dual N-Channel MOSFET

2KK5121

■ Features

- $BV_{DSS} = 30\text{ V}$
- $I_D = 3.7\text{ A}$
- $R_{DS(ON)} = 40\text{ m}\Omega(\text{Typ.}) @ V_{GS} = 10\text{ V}$
- Advanced High Cell Density Trench technology
- Super Low Gate Charge

Top View

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

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	V_{DS}	30	V	
Gate-Source Voltage	V_{GS}	± 20		
Continuous Drain Current (Note 1)	I_D	$T_C=25^\circ\text{C}$	3.7	A
		$T_C=70^\circ\text{C}$	3.0	
Pulsed Drain Current (Note 2)	I_{DM}	20		
Thermal Resistance, Junction- to-Ambient (Note 1)	$R_{\theta JA}$	110	$^\circ\text{C}/\text{W}$	
Thermal Resistance, Junction- to-Case (Note 1)	$R_{\theta JC}$	80		
Power Dissipation (Note 3)	P_D	1.15	W	
Junction Temperature	T_J	150	$^\circ\text{C}$	
Storage Temperature Range	T_{stg}	-55 to 150		

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
2. The data tested by pulsed , pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
3. The power dissipation is limited by 150 $^\circ\text{C}$ junction temperature.
4. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

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■ Electrical Characteristics (T_J = 25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D = 250 μA, V _{GS} = 0V	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V			1	μA
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 55°C			5	
Gate to Source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V			100	nA
ON Characteristics						
Gate to Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.0		2.0	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10 V, I _D = 3.5 A		40	50	mΩ
		V _{GS} = 6 V, I _D = 2 A			65	
		V _{GS} = 4.5 V, I _D = 2 A			73	
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D = 5 A		12		S
Charges and Capacitances						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 15 V, f = 1 MHz		170	210	pF
Output Capacitance	C _{oss}			35	45	
Reverse Transfer Capacitance	C _{rss}			23	30	
Gate resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz		4	6	Ω
Total Gate Charge	Q _g	V _{GS} = 4.5 V, V _{DS} = 15 V, I _D = 3.5 A		4.05	5	nC
Gate Source Charge	Q _{gs}			0.55	0.8	
Gate Drain Charge	Q _{gd}			1.0	1.8	
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{DD} =15V, V _{GEN} =10V, R _G =3Ω, I _D =1.0A, R _L =4.2Ω.		4.5		ns
Turn-On Rise Time	t _r			1.5		
Turn-Off Delay Time	t _{d(off)}			18.5		
Turn-Off Fall Time	t _f			15.5		
Drain-Source Diode Characteristics						
Reverse Recovery Time	t _{rr}	I _F =0.35A, di/dt=100A/μs		7.5		ns
Reverse Recovery Charge	Q _{rr}				2.5	
Diode Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 3.5 A			1.0	V
Maximum Continuous Current	I _S	V _G =V _D =0V, Force Current			1.5	A
Maximum Pulsed Current	I _{SM}				3.5	A

■ Marking

Marking	K5121 *
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■ Typical Characteristics

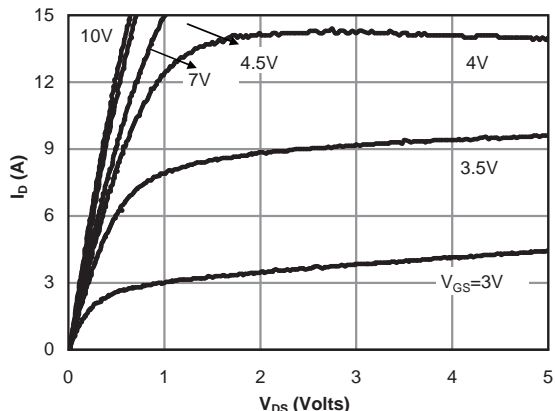


Fig 1: On-Region Characteristics

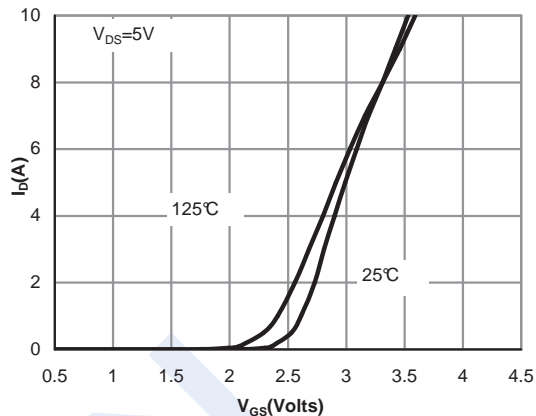


Figure 2: Transfer Characteristics

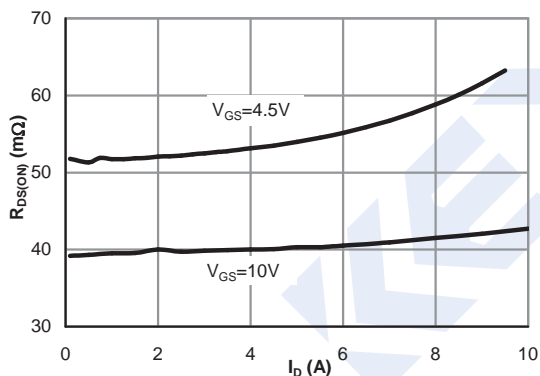


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

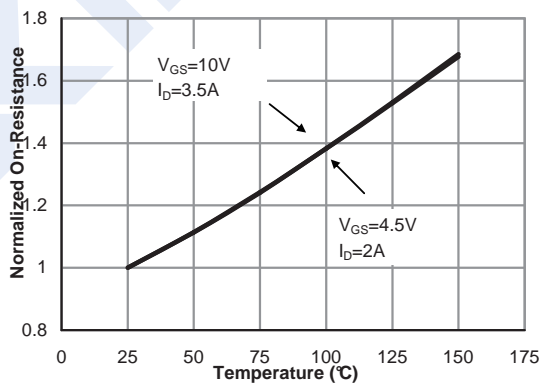


Figure 4: On-Resistance vs. Junction Temperature

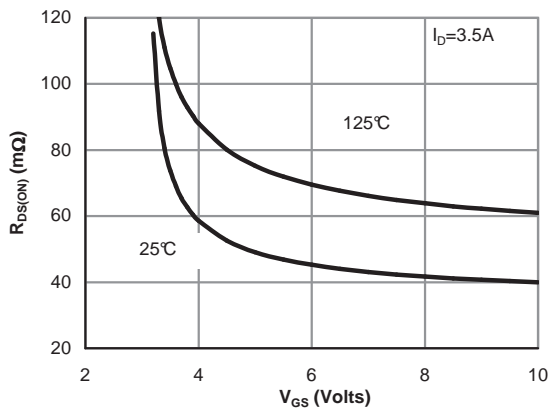


Figure 5: On-Resistance vs. Gate-Source Voltage

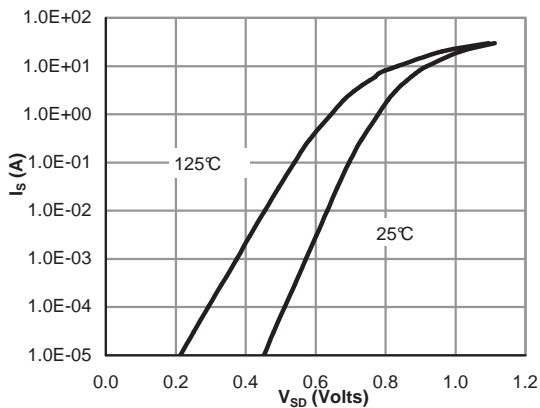


Figure 6: Body-Diode Characteristics

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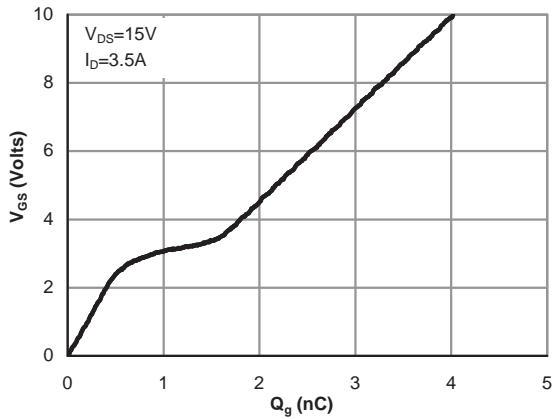


Figure 7: Gate-Charge Characteristics

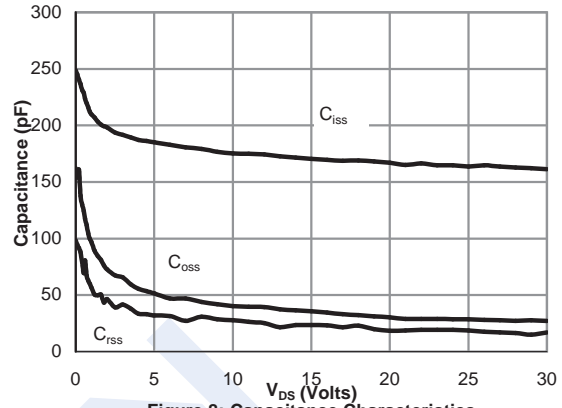


Figure 8: Capacitance Characteristics

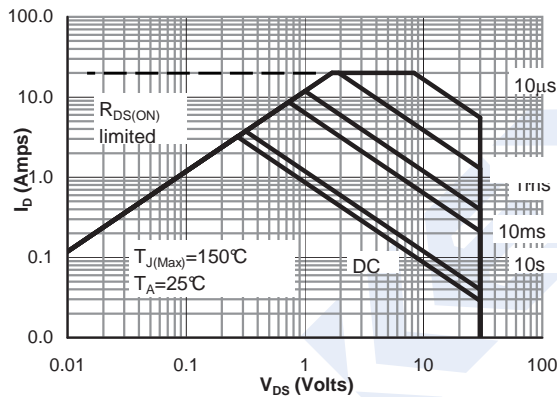


Figure 9: Maximum Forward Biased Safe Operating Area

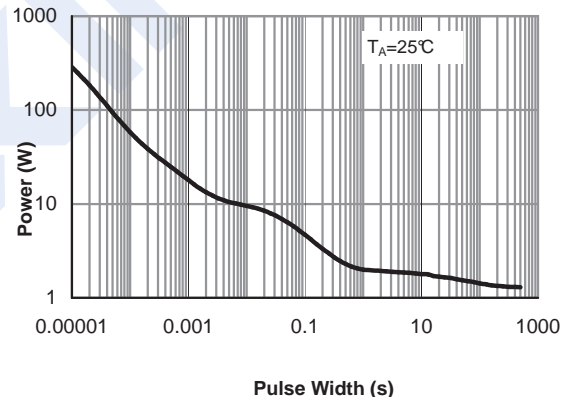


Figure 10: Single Pulse Power Rating Junction-to-Ambient

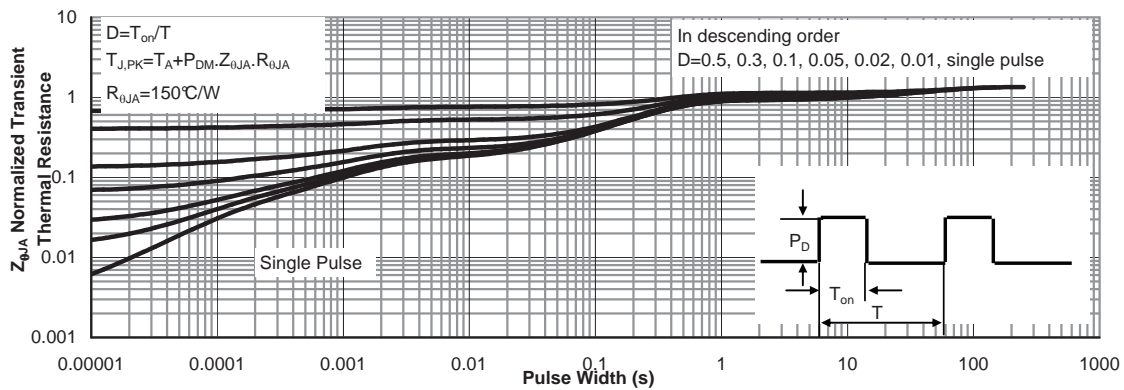


Figure 11: Normalized Maximum Transient Thermal Impedance