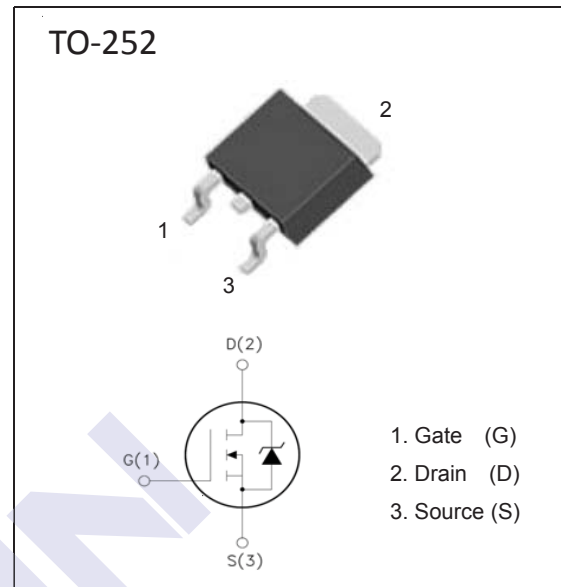


## N-Channel MOSFET

## 2KK5064

## ■ Features

- $V_{DSS} = 100V$
- $I_D = 42A$
- $R_{DS(ON)} = 42m\Omega @ V_{GS}=10V$
- $R_{DS(ON)} = 45m\Omega @ V_{GS}=4.5V$



## ■ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	100	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$		
Continuous Drain Current	$I_D$	$T_C = 25^\circ C$	42	A
		$T_C = 100^\circ C$	30	
Pulsed Drain Current (Note 1)	$I_{DM}$	140		
Single Pulse Avalanche Energy (Note 2)	EAS	420	mJ	
Avalanche Current (Note 1)	$I_{AR}$	22	A	
Repetitive Avalanche Energy (Note 1)	EAR	16	mJ	
Peak Diode Recovery (Note 3)	$dv/dt$	5	V/ns	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	40	$^\circ C/W$	
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.95		
Maximum Power Dissipation	$P_D$	$T_A = 25^\circ C$	3.8	W
		$T_C = 25^\circ C$	160	
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 175	$^\circ C$	

## Notes

1. Repetitive rating; pulse width limited by max. junction temperature.
2. Starting  $T_J = 25^\circ C$ ,  $L = 1.7mH$ ,  $R_G = 25\Omega$ ,  $I_{AS} = 22A$ .
3.  $I_{SD} \leq 22A$ ,  $di/dt \leq 180A/\mu s$ ,  $V_{DD} \leq V_{(BR)DSS}$ ,  $T_J \leq 175^\circ C$

## 2KK5064

■ Electrical Characteristics (T<sub>J</sub>=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	I <sub>D</sub> =250μA, V <sub>GS</sub> =0V	100			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V			1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.3		2.5	V
Static Drain-Source On-Resistance (Note 1)	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =22A		42	50	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A		45	58	
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =25V, f=1MHz		1900		pF
Output Capacitance	C <sub>oss</sub>			450		
Reverse Transfer Capacitance	C <sub>rss</sub>			230		
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =50V, I <sub>D</sub> =22A, R <sub>G</sub> =3.6Ω, R <sub>D</sub> =2.9Ω		11		ns
Turn-On Rise Time	t <sub>r</sub>			56		
Turn-Off Delay Time	t <sub>d(off)</sub>			45		
Turn-Off Fall Time	t <sub>f</sub>			40		
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =80V, I <sub>D</sub> =22A, V <sub>GS</sub> =10V			110	nC
Gate Source Charge	Q <sub>gs</sub>				15	
Gate Drain Charge	Q <sub>gd</sub>				58	
Body Diode Voltage	V <sub>SD</sub>	I <sub>S</sub> =22A, V <sub>GS</sub> =0V			1.3	V
Diode Forward Current	I <sub>S</sub>				42	A
Body Diode Reverse Recovery Time	t <sub>rr</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =22A, dI/dt=100A/μs		180		ns
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>			1.2		μC

Notes:

1. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
2. Switching characteristics are independent of operating junction temperature.

## ■ Marking

Marking	K5064 K****
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## 2KK5064

### Typical Characteristics

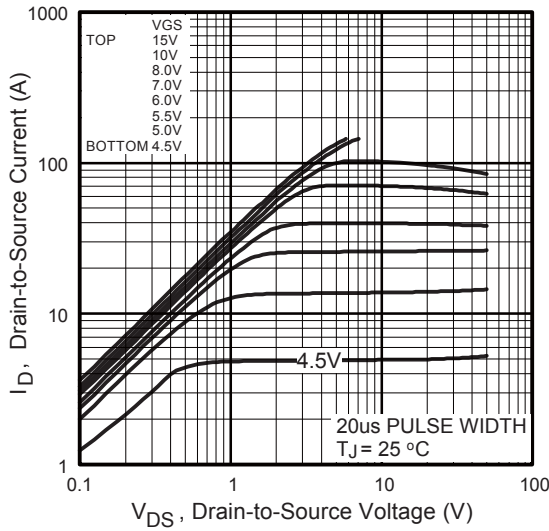


Fig 1. Typical Output Characteristics

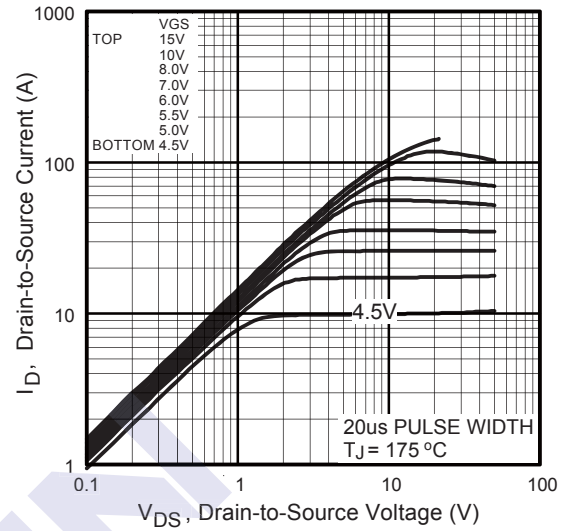


Fig 2. Typical Output Characteristics

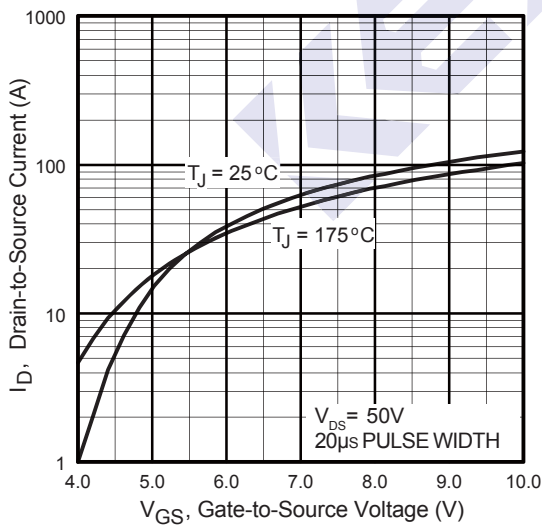


Fig 3. Typical Transfer Characteristics

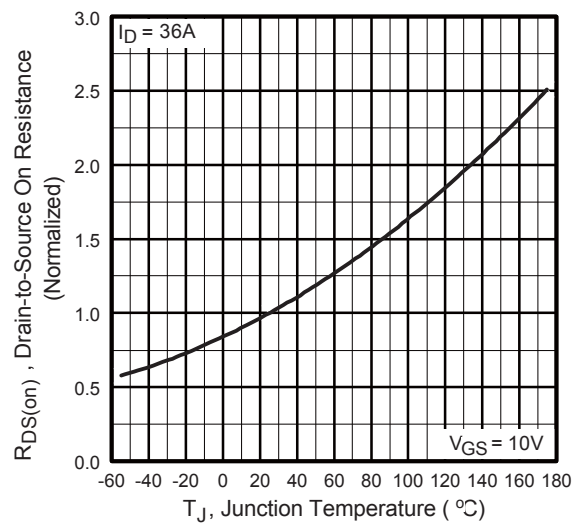


Fig 4. Normalized On-Resistance Vs. Temperature

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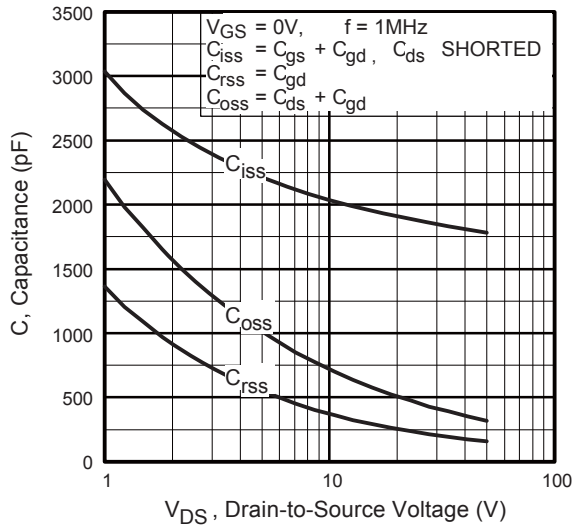


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

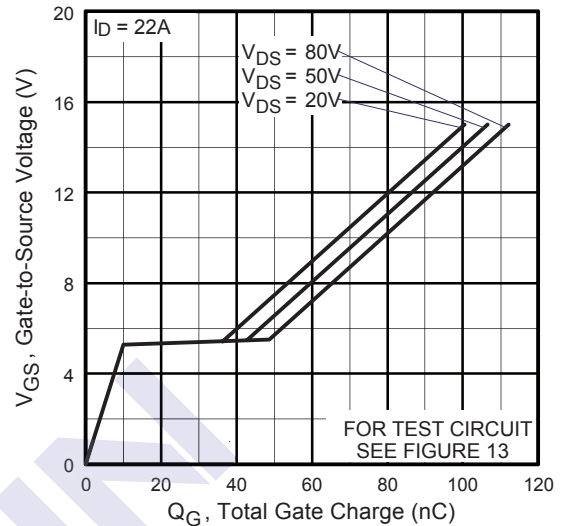


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage

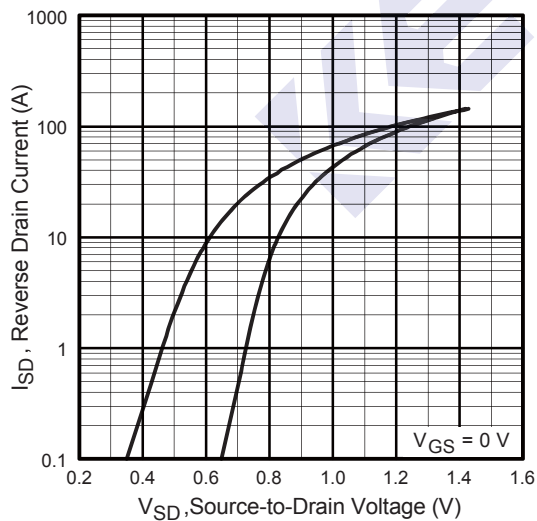


Fig 7. Typical Source-Drain Diode Forward Voltage

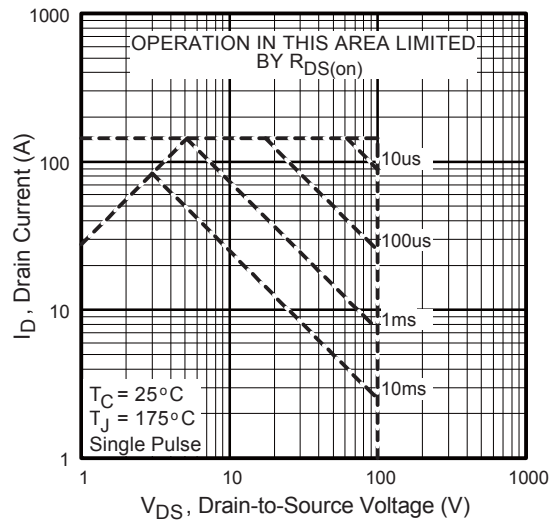


Fig 8. Maximum Safe Operating Area

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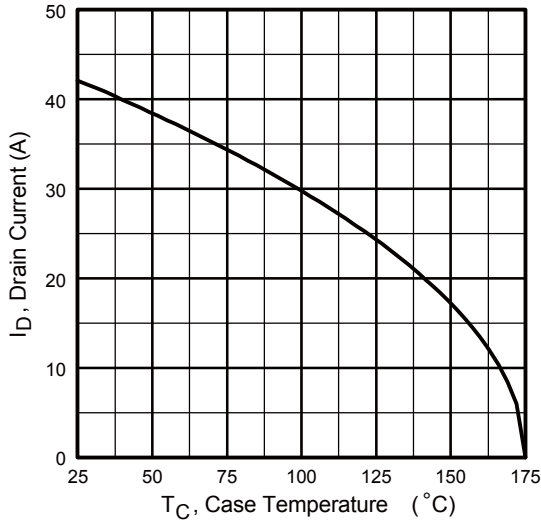


Fig 9. Maximum Drain Current Vs. Case Temperature

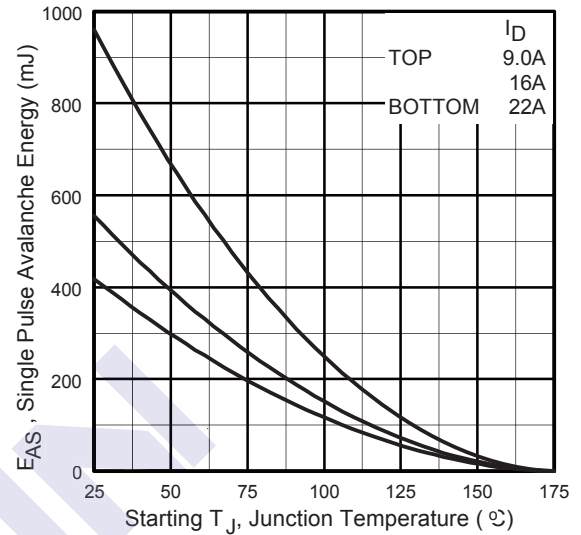


Fig 10. Maximum Avalanche Energy Vs. Drain Current

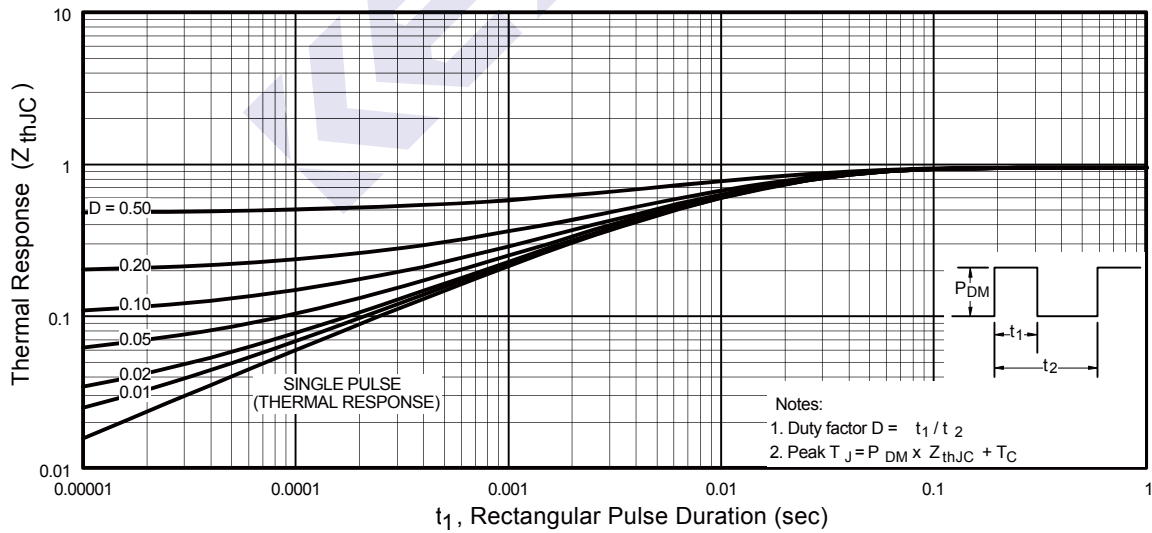


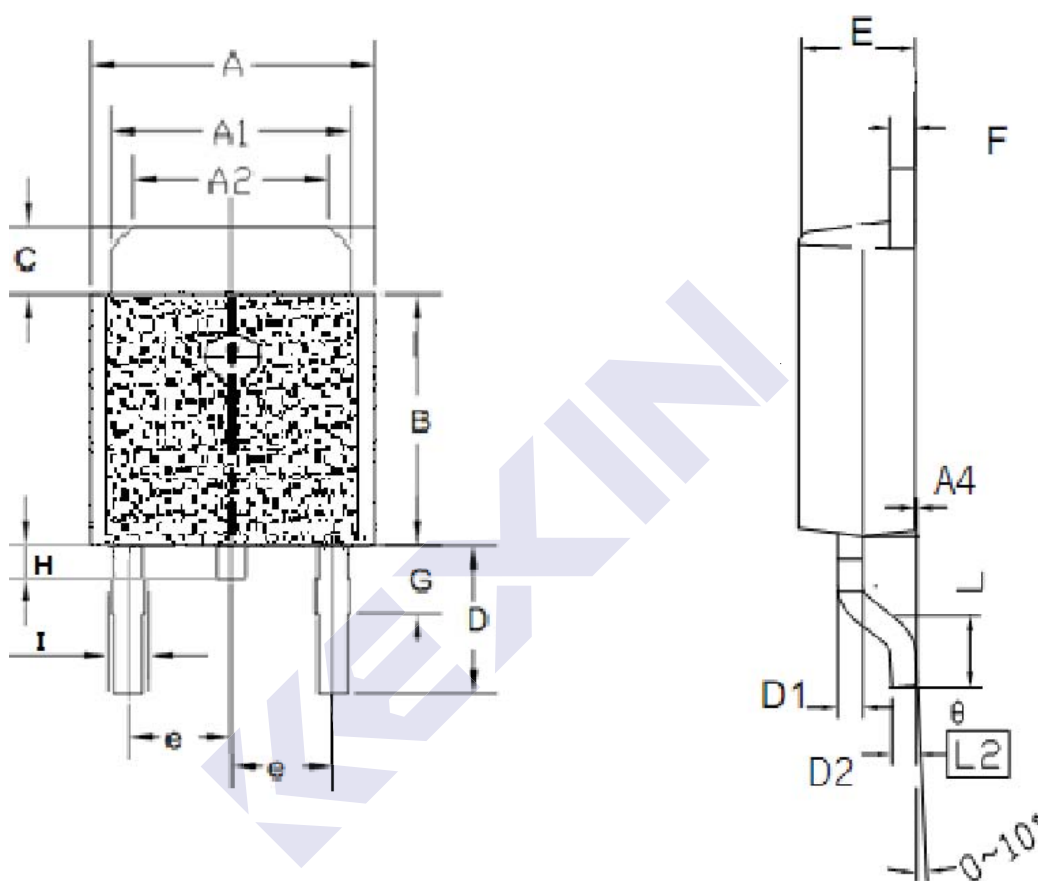
Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

## 2KK5064

## ■ Package Dimension

TO-252

Units: mm



Symbol	Min	Max	Symbol	Min	Max
A	6.40	6.60	D	2.90	3.10
A1	5.20	5.40	D1	0.45	0.55
A2	4.40	4.60	D2	0.45	0.55
A3	4.40	4.60	e	2.30	
A4	0.00	0.15	E	2.20	2.40
A5	4.65	4.95	F	0.49	0.59
B	6.00	6.20	G	1.70	
B1	1.57	1.77	L	1.40	1.60
C	0.90	0.96	$\theta(^{\circ})$	0.00	10.00
I	0.60	0.90	H	0.49	0.52