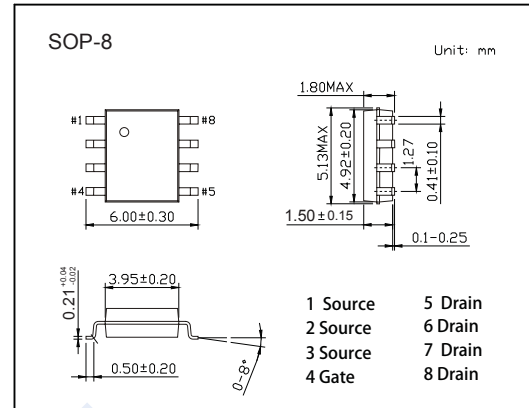
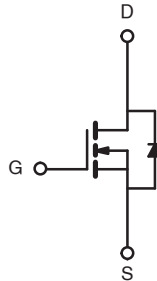


N-Channel MOSFET

2KK7004

■ Features

- $BV_{DSS} = 40\text{ V}$
- I_D (at $V_{GS} = 10\text{ V}$) = 11 A
- $R_{DS(ON)}$ (at $V_{GS} = 10\text{ V}$) < 11.5 m Ω
- Low On-resistance
- Simple Drive Requirement
- Fast Switching Characteristic

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^C	I_D	$T_A = 25^\circ\text{C}$	11
		$T_A = 70^\circ\text{C}$	8.8
Pulsed Drain Current ^A	I_{DM}	50	A
Power Dissipation	P_D	2.5	W
Thermal Resistance, Junction- to-Ambient	R_{thJA}	50	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to 150	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D = 250\ \mu\text{A}$, $V_{GS} = 0\text{V}$	40			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 40\text{V}$, $V_{GS} = 0\text{V}$			10	μA
Gate to Source Leakage Current	I_{GSS}	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 20\text{V}$			± 100	nA
Gate to Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\ \mu\text{A}$	1		3	V
Static Drain-Source On-Resistance ^B	$R_{DS(on)}$	$V_{GS} = 10\text{V}$, $I_D = 10\text{A}$			11.5	m Ω
		$V_{GS} = 4.5\text{V}$, $I_D = 6\text{A}$			20	
Forward Transconductance	g_{FS}	$V_{DS} = 10\text{V}$, $I_D = 10\text{A}$		26		S
Input Capacitance	C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = 25\text{V}$, $f = 1\text{MHz}$		665	1060	pF
Output Capacitance	C_{oss}			140		
Reverse Transfer Capacitance	C_{rss}			80		
Gate Resistance	R_g		$V_{GS} = 0\text{V}$, $V_{DS} = 0\text{V}$, $f = 1\text{MHz}$		2.2	
Total Gate Charge	Q_g	$V_{GS} = 4.5\text{V}$, $V_{DS} = 20\text{V}$, $I_D = 10\text{A}$		9	14.5	nC
Gate Source Charge	Q_{gs}			2		
Gate Drain Charge	Q_{gd}			5		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 10\text{V}$, $V_{DS} = 20\text{V}$, $R_g = 3.3\ \Omega$, $I_D = 1\text{A}$		7		ns
Turn-On Rise Time	t_r			6.5		
Turn-Off Delay Time	$t_{d(off)}$			20		
Turn-Off Fall Time	t_f			8.5		
Body Diode Reverse Recovery Time	t_{rr}	$I_S = 10\text{A}$, $V_{GS} = 0\text{V}$, $di/dt = 100\text{A}/\mu\text{s}$		21		nC
Body Diode Reverse Recovery Charge	Q_{rr}			14		
Diode Forward Voltage	V_{SD}	$V_{GS} = 0\text{V}$, $I_S = 2.1\text{A}$			1.2	V

Notes:

A. Pulse width limited by Max. junction temperature.

B. Pulse test.

C. Surface mounted on 1 in² copper pad of FR4 board, $t \leq 10\text{sec}$; 125 °C/W when mounted on Min. copper pad.

■ Marking

Marking	K7004 KC****
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N-Channel MOSFET

2KK7004

Typical Electrical and Thermal Characteristics

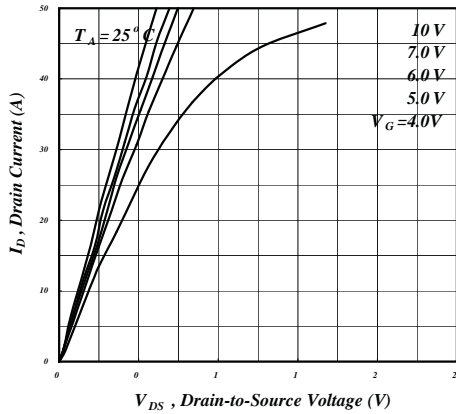


Fig 1. Typical Output Characteristics

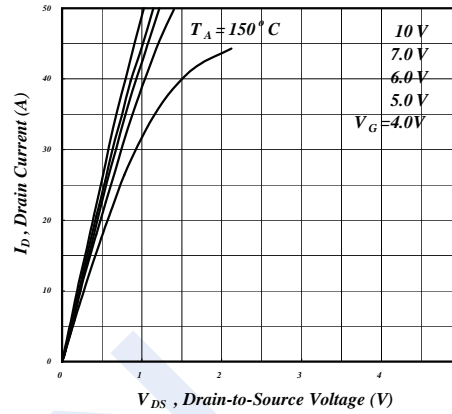


Fig 2. Typical Output Characteristics

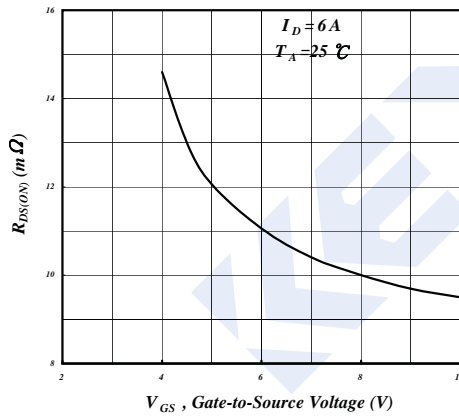


Fig 3. On-Resistance v.s. Gate Voltage

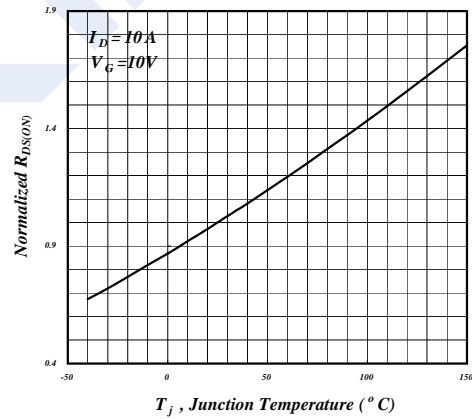


Fig 4. Normalized On-Resistance v.s. Junction Temperature

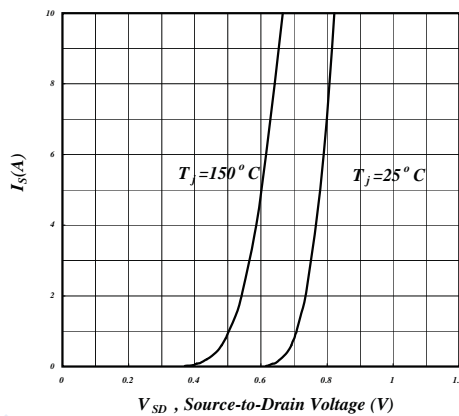


Fig 5. Forward Characteristic of Reverse Diode

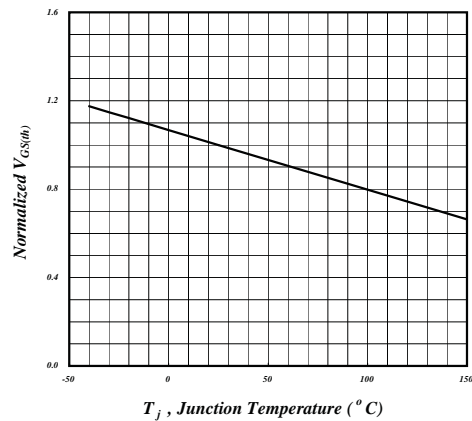


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

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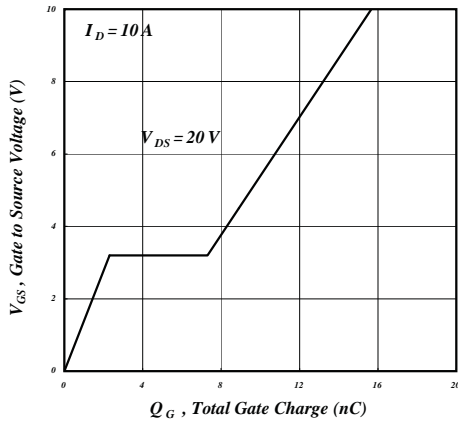


Fig 7. Gate Charge Characteristics

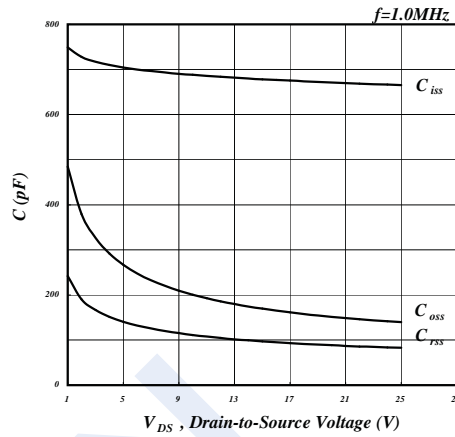


Fig 8. Typical Capacitance Characteristics

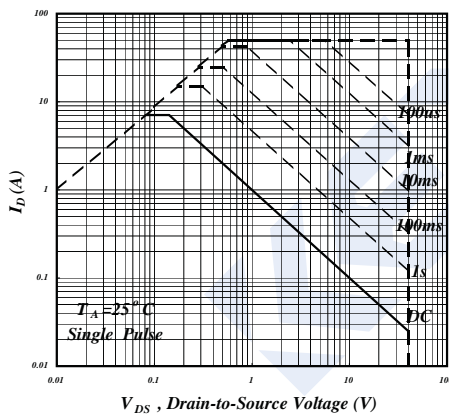


Fig 9. Maximum Safe Operating Area

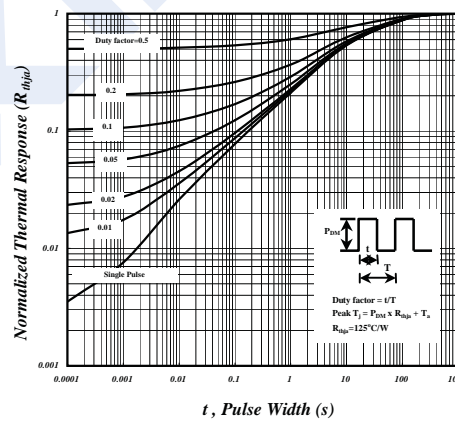


Fig 10. Effective Transient Thermal Impedance

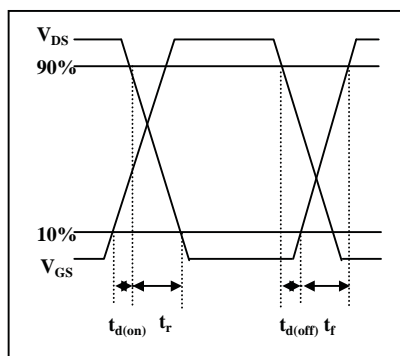


Fig 11. Switching Time Waveform

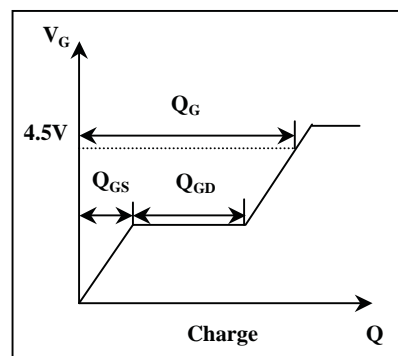


Fig 12. Gate Charge Waveform