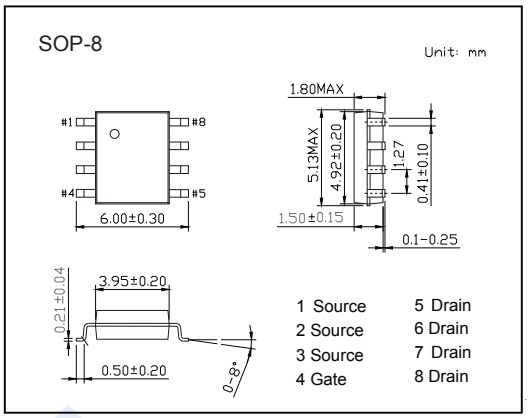
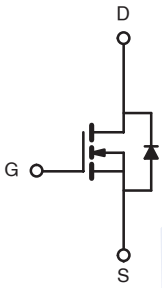
N-Channel MOSFET

2KK7005



■ Features

- BV_{DSS} = 20 V
- I_D = 25 A
- $R_{DS(ON)}$ < 4 mΩ@ VGS = 4.5 V
- $R_{DS(ON)}$ < 6 mΩ@ VGS = 2.5 V



■ Absolute Maximum Ratings (T_A = 25℃ unless otherwise noted)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±12	
Continuous Drain Current	T_A=25℃	I_D	25	A
	T_A=100℃		17.7	
Pulsed Drain Current		I_{DM}	140	
Power Dissipation		P_D	2.5	W
Thermal Resistance.Junction- to-Ambient (Note 2)		$R_{\theta JA}$	50	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

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■ Electrical Characteristics (T_A = 25℃ unless othewise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D = 250 μA, V_{GS} = 0V	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20 V, V_{GS} = 0 V			1	μA
Gate to Source Leakage Current	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±12 V			±100	nA
On Characteristics (Note 3)						
Gate to Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = 250μA	0.5		1.2	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS} = 4.5 V, I_D = 20 A			4	mΩ
		V_{GS} = 2.5 V, I_D = 18 A			6	
Forward Transconductance	g_{FS}	V_{DS} = 5 V, I_D = 20 A	60			S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 10 V, f = 1 MHz		5300		pF
Output Capacitance	C_{oss}			785		
Reverse Transfer Capacitance	C_{rss}			629		
Switching Characteristics (Note 4)						
Total Gate Charge	Q_g	V_{GS} = 4.5V, V_{DS} = 10 V, I_D = 20 A		64.9		nC
Gate Source Charge	Q_{gs}			6.5		
Gate Drain Charge	Q_{gd}			13.8		
Turn-On DelayTime	$t_{d(on)}$	V_{GS} = 4.5V, V_{DS} = 10 V, R_{GEN} =3 Ω, R_L =0.5 Ω		10		ns
Turn-On Rise Time	t_r			12		
Turn-Off DelayTime	$t_{d(off)}$			50		
Turn-Off Fall Time	t_f			20		
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS} = 0 V, I_S = 25 A			1.2	V
Diode Forward Current (Note 2)	I_S				25	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ⩽ 10 sec.
3. Pulse Test: Pulse Width ⩽ 300μs, Duty Cycle ⩽ 2%.
4. Guaranteed by design, not subject to production

■ Marking

Marking	K7005 KC****

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■ Typical Electrical and Thermal Characteristics

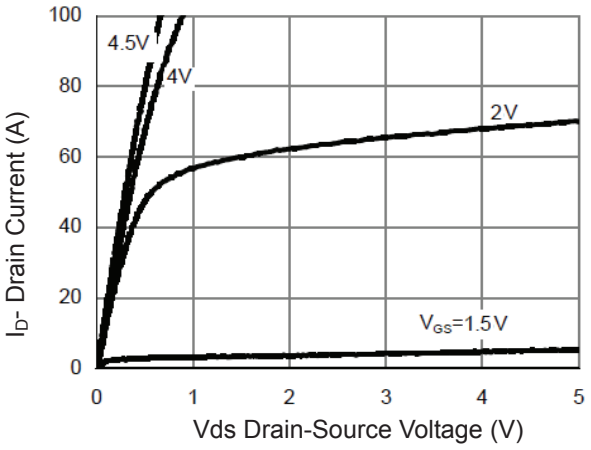

Figure 1 Output Characteristics

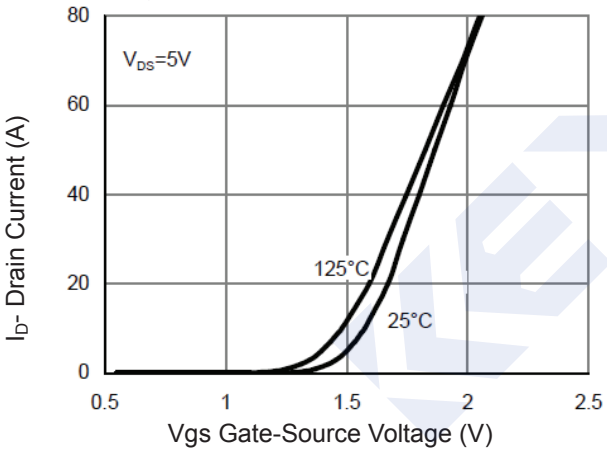

Figure 2 Transfer Characteristics

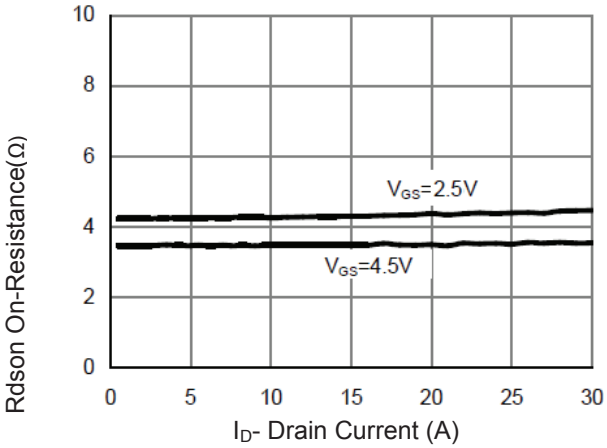

Figure 3 Rdson- Drain Current

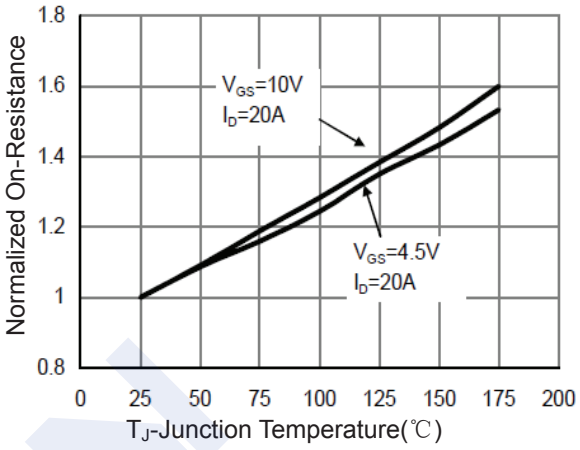

Figure 4 Rdson-Junction Temperature

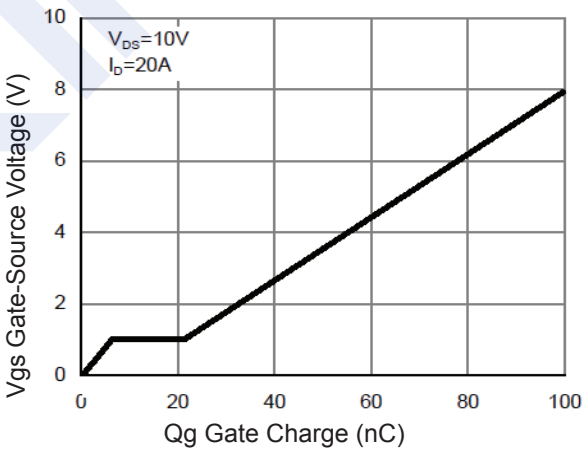

Figure 5 Gate Charge

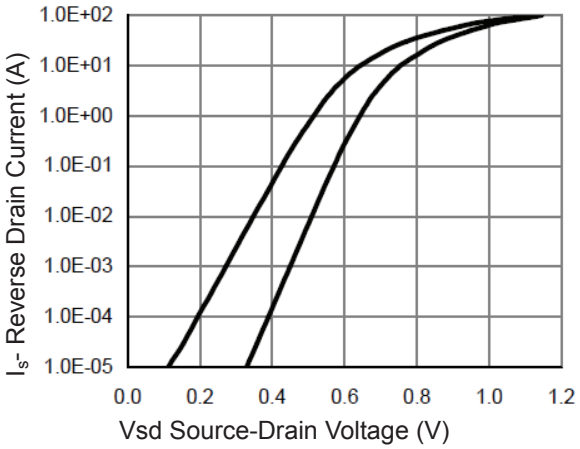

Figure 6 Source- Drain Diode Forward

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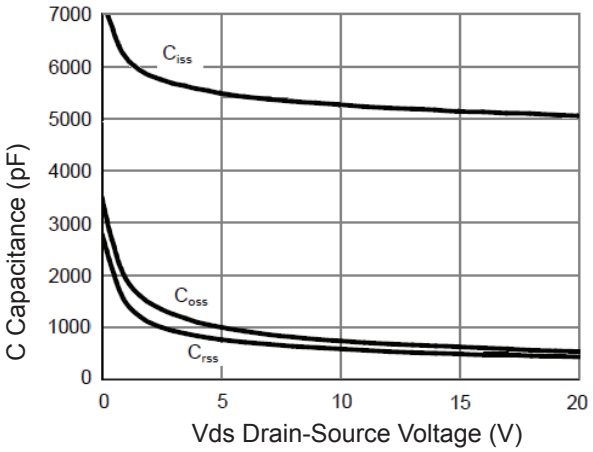

Figure 7 Capacitance vs Vds

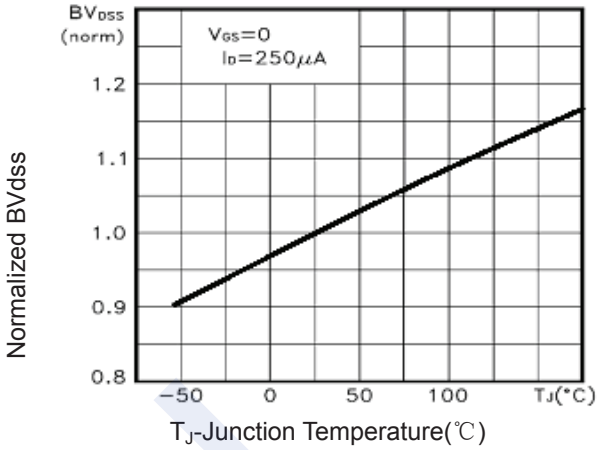

Figure 9 BV_{DSS} vs Junction Temperature

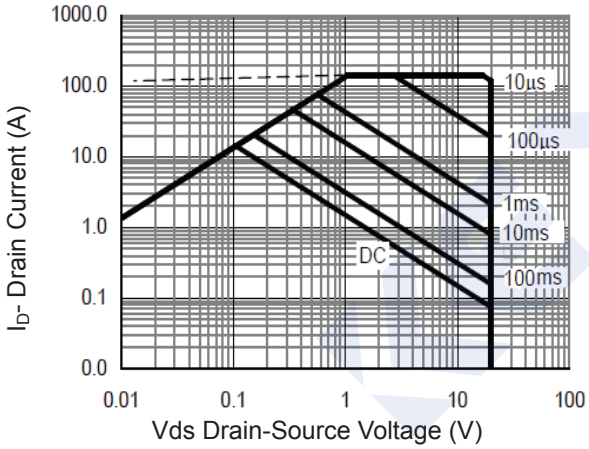

Figure 8 Safe Operation Area

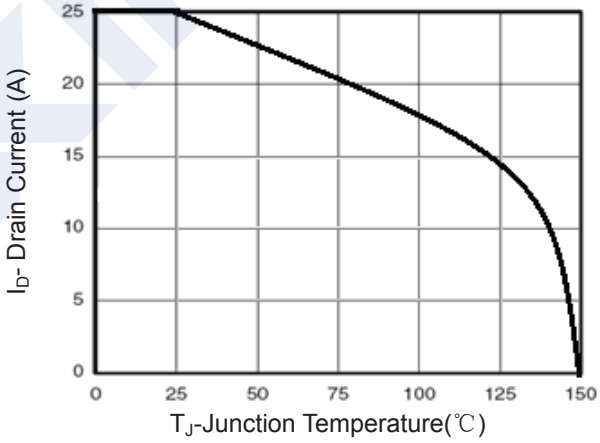

Figure 10 Current vs Junction Temperature

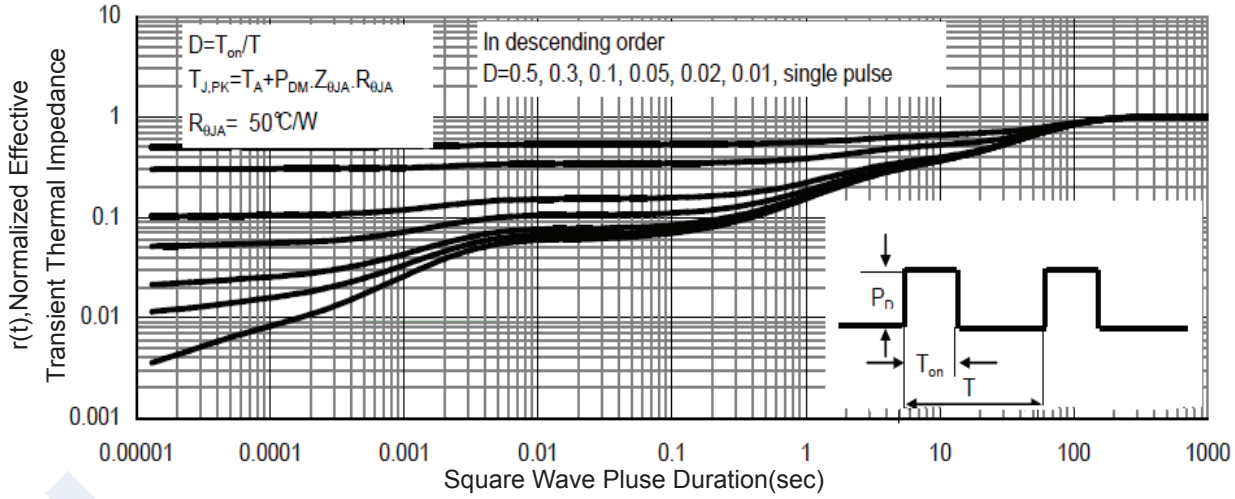

Figure 11 Normalized Maximum Transient Thermal Impedance