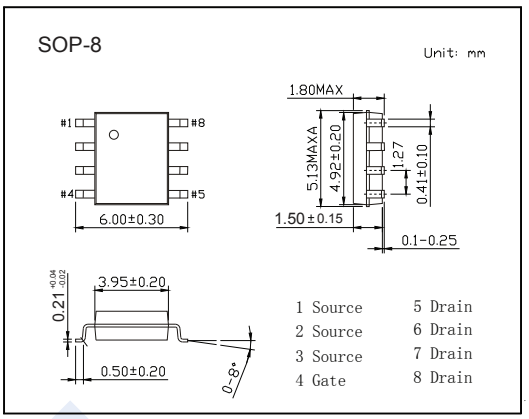
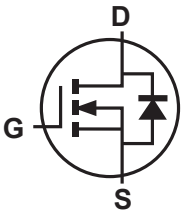
N-Channel MOSFET

KI10N06DY



■ Features

- V_{DS} (V) = 60V
- $R_{DS(ON)}$ < 18mΩ (V_{GS} = 10V), I_D = 9.2 A
- $R_{DS(ON)}$ < 28mΩ (V_{GS} = 4.5V), I_D = 7.5 A
- Low Input Capacitance
- Fast Switching Speed



■ Absolute Maximum Ratings (T_A = 25℃,unless otherwise specified.)

Parameter			Symbol	Rating	Unit
Drain-Source Voltage			V_{DS}	60	V
Gate-Source Voltage			V_{GS}	±20	
Continuous Drain Current (Note 2), V_{GS} = 10V	Steady State	T_A=25℃ T_A=70℃	I_D	9.2 7.4	A
	t<10s	T_A=25℃ T_A=70℃		11.9 9.5	
Continuous Drain Current (Note 2), V_{GS} = 4.5V	Steady State	T_A=25℃ T_A=70℃		7.5 6.0	
	t<10s	T_A=25℃ T_A=70℃		9.7 7.7	
Pulsed Drain Current (10μs pulse, duty cycle = 1%)			I_{DM}	60	
Maximum Continuous Body Diode Forward Current (Note 2)			I_S	2	
Avalanche Current (Note 3) L = 0.1mH			I_{AS}	15.3	A
Avalanche Energy (Note 3) L = 0.1mH			E_{AS}	11.7	mJ
Total Power Dissipation (Note 1)			P_D	1.5	W
Total Power Dissipation (Note 2)				2.1	
Thermal Resistance, Junction to Ambient (Note 1)	Steady State		R_{thJA}	85	℃/W
	t<10s			45	
Thermal Resistance, Junction to Ambient (Note 2)	Steady State		R_{thJA}	74	
	t<10s			37	
Thermal Resistance, Junction to Case			R_{thJC}	13	
Junction Temperature			T_J	150	℃
Storage Temperature Range			T_{stg}	-55 to 150	

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■ Absolute Maximum Ratings (T_A = 25℃,unless otherwise specified.)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=48V, V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250μA	1		2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=10A			18	mΩ
		V_{GS}=4.5V, I_D=6A			28	
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=30V, f=1MHz		864		pF
Output Capacitance	C_{oss}			282		
Reverse Transfer Capacitance	C_{rss}			27		
Gate resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		1.3		Ω
Turn-On DelayTime	$t_{d(on)}$	V_{DS}=30V, I_D=10A, R_G=6Ω, V_{GS}=10V		3.4		ns
Turn-On Rise Time	t_r			5.2		
Turn-Off DelayTime	$t_{d(off)}$			13		
Turn-Off Fall Time	t_f			7		
Total Gate Charge (V_{GS} = 4.5V)	Q_g	V_{DS}=30V, I_D=10A		8.4		nC
Total Gate Charge (V_{GS} = 10V)				17		
Gate Source Charge	Q_{gs}			3.1		
Gate Drain Charge	Q_{gd}			4.3		
Body Diode Reverse Recovery Time	t_{rr}	I_F= 10A, dI/dt = 100A/μs		22		ns
Body Diode Reverse Recovery Charge	Q_{rr}			11		nC
Diode Forward Voltage (Note 3)	V_{SD}	I_{SD}=1A,V_{GS}=0V			1.2	V

Notes: 1. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.

2. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate.

3. I_{AS} and E_{AS} rating are based on low frequency and duty cycles to keep T_J = +25°C.

■ Marking

Marking	10N06 KC***

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■ Typical Characterisitics

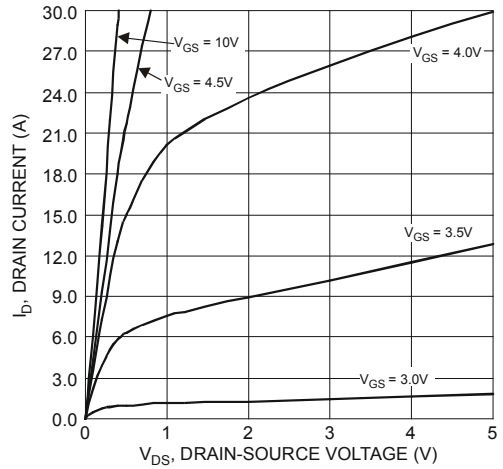

Figure 1 Typical Output Characteristics

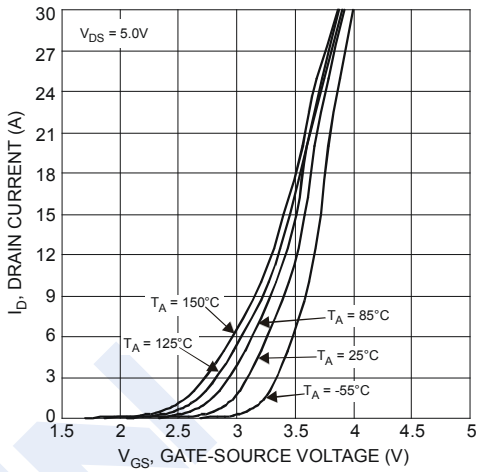

Figure 2 Typical Transfer Characteristics

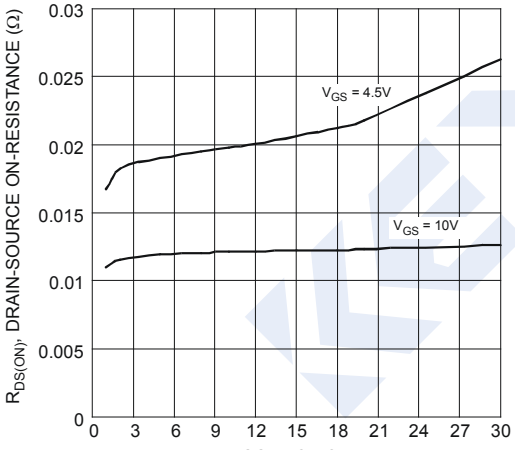

Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

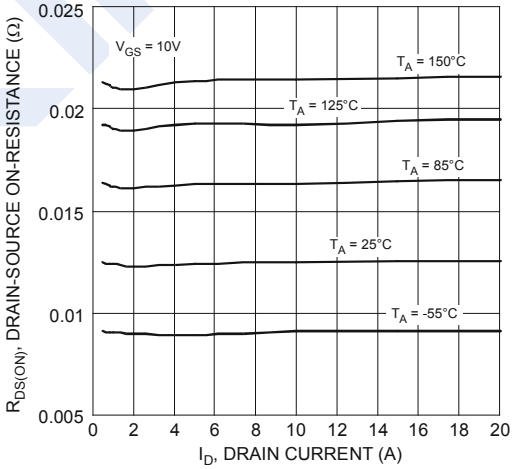

Figure 4 Typical On-Resistance vs. Drain Current and Temperature

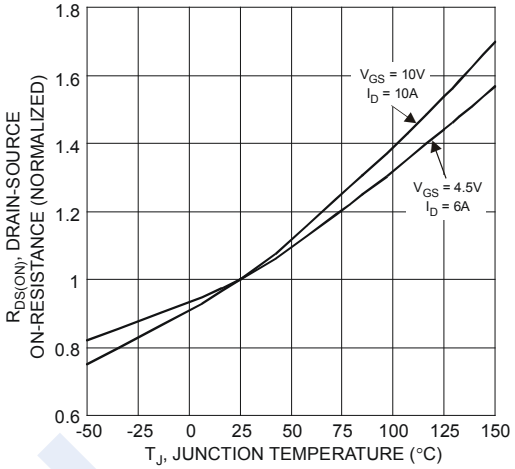

Figure 5 On-Resistance Variation with Temperature

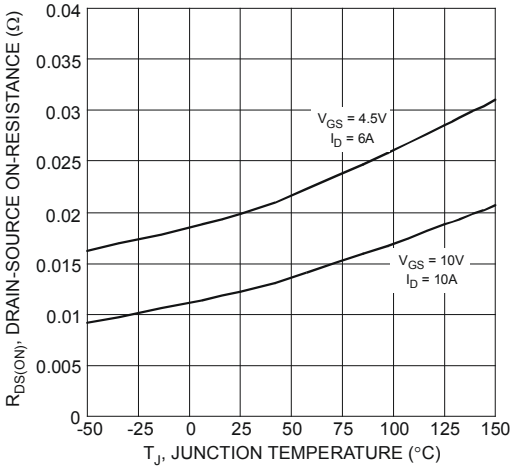

Figure 6 On-Resistance Variation with Temperature

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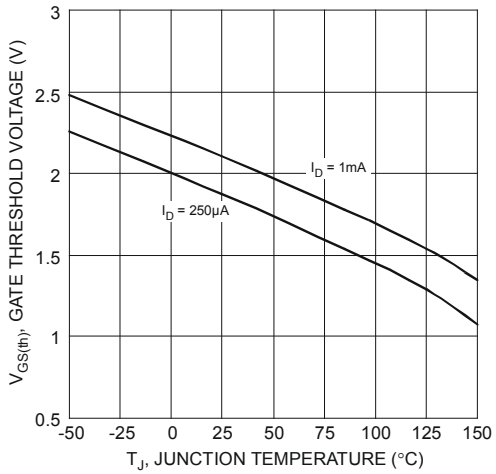

Figure 7 Gate Threshold Variation vs. Ambient Temperature

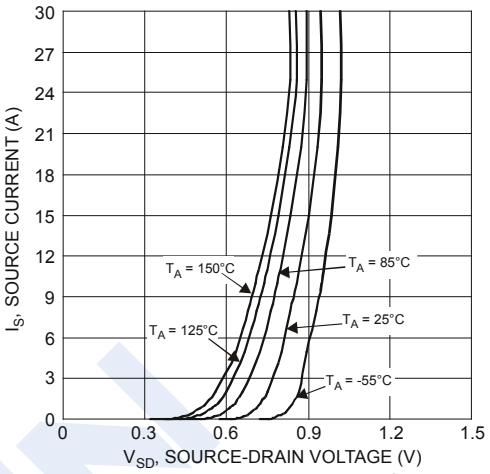

Figure 8 Diode Forward Voltage vs. Current

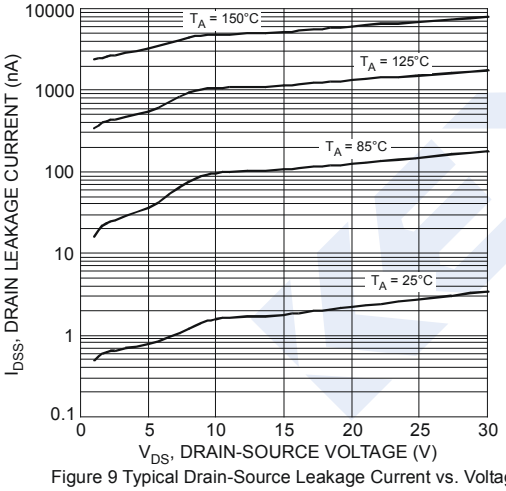

Figure 9 Typical Drain-Source Leakage Current vs. Voltage

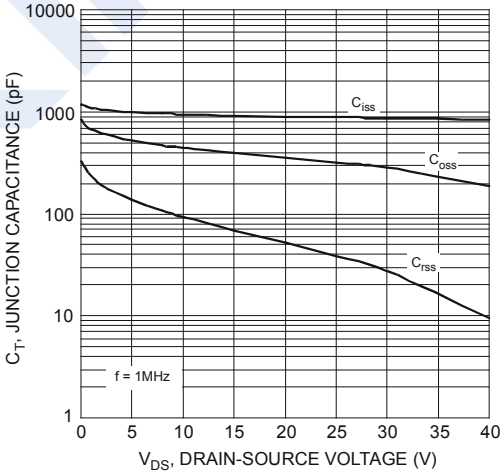

Figure 10 Typical Junction Capacitance

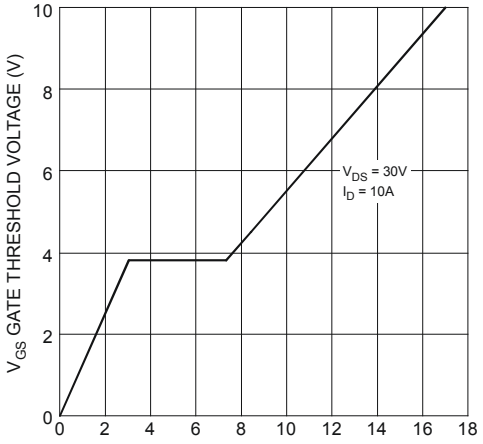

Figure 11 Gate Charge

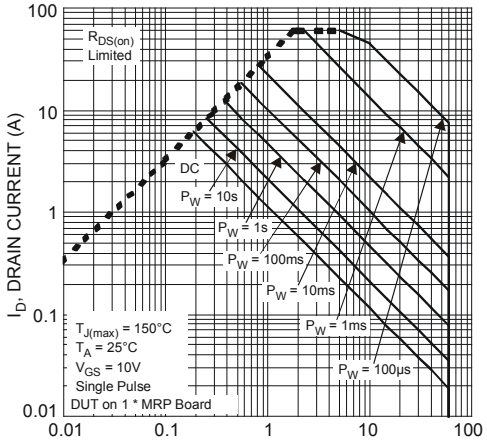

Figure 12 SOA, Safe Operation Area

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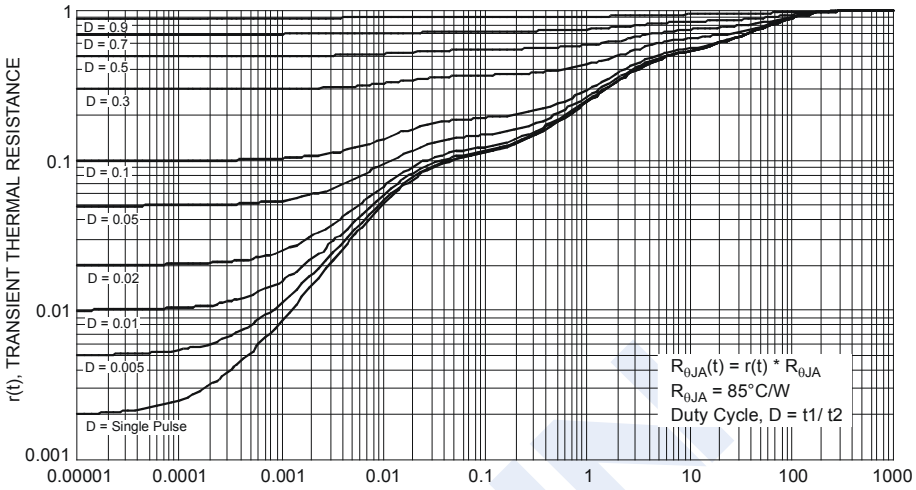

Figure 13 Transient Thermal Resistance