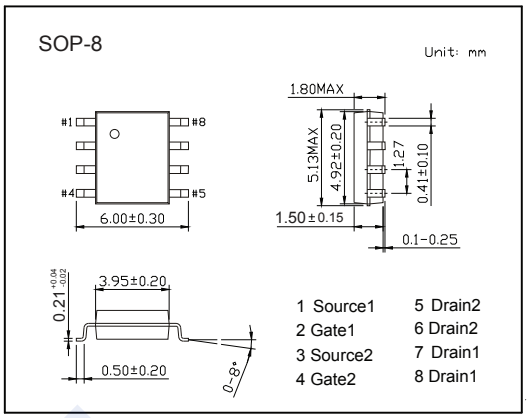
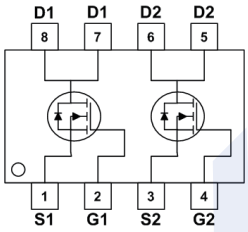
Dual N-Channel MOSFET

2KK5782



■ Features

- V_{DS} = 30 V
- I_D (at V_{GS}=10V) = 12 A
- $R_{DS(ON)}$ (at V_{GS} = 10 V) = 10 mΩ (Typ.)
- $R_{DS(ON)}$ (at V_{GS} = 4.5 V) = 14 mΩ (Typ.)
- Dual N-Channel, 5V Logic Level Control



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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_A = 25℃	I_D	12	A
	T_A = 100℃		7.3	
Pulsed Drain Current (Note 1)		I_{DM}	48	
Avalanche Energy, Single Pulsed (Note 2)		E_{AS}	26	mJ
Thermal Resistance, Junction- to-Ambient		$R_{\theta JA}$	62.5	℃/W
Thermal Resistance, Junction- to-Case		$R_{\theta JL}$	40	
Power Dissipation		P_D	2	W
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

Notes:

1.Repetitive rating; pulse width limited by max. junction temperature.

2.Limited by T_{Jmax}, starting T_J = 25°C, L = 0.5mH,R_G = 25Ω, I_{AS} = 8A, V_{GS} =10V.

3. Pulse width ≤ 300μs; duty cycle≤ 2%.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static 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=125℃			100	
Gate to Source Leakage Current	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Gate to Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS} , I_D = 250μA	1.3		2.4	V
Static Drain-Source On-Resistance (Note 3)	$R_{DS(on)}$	V_{GS} = 10 V, I_D = 10 A		10	13	mΩ
		V_{GS} = 4.5 V, I_D = 6 A		14	18	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{GS} = 0 V, V_{DS} = 15 V, f = 1 MHz		890	1000	pF
Output Capacitance	C_{oss}			140		
Reverse Transfer Capacitance	C_{rss}			100		
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, f = 1MHz		4.5		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{GS} = 10 V, V_{DS} = 15 V, I_D = 10 A		17		nC
Gate Source Charge	Q_{gs}			3.8		
Gate Drain Charge	Q_{gd}			4.8		
Turn-On DelayTime	$t_{d(on)}$	V_{DS} = 15 V, I_D = 10 A, R_G = 3 Ω, V_{GS} = 10 V		6.5		ns
Turn-On Rise Time	t_r			11.2		
Turn-Off DelayTime	$t_{d(off)}$			20.7		
Turn-Off Fall Time	t_f			5.3		
Drain-Source Diode Characteristics						
Body Diode Reverse Recovery Time	t_{rr}	I_F = 10 A, dI/dt = 500 A/μs		20		ns
Body Diode Reverse Recovery Charge	Q_{rr}			11.5		nC
Diode Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 2 A			1.2	V

Note 3: Pulse width ≤ 300μs; duty cycle≤ 2%.

■ Marking

Marking	K5782 KA****

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■ Typical Characterisitics

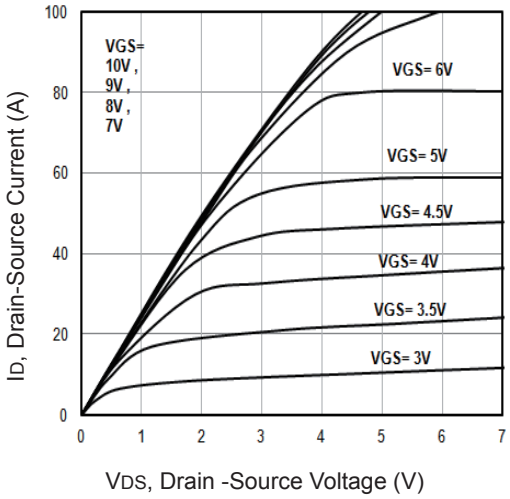

Fig1. Typical Output Characteristics

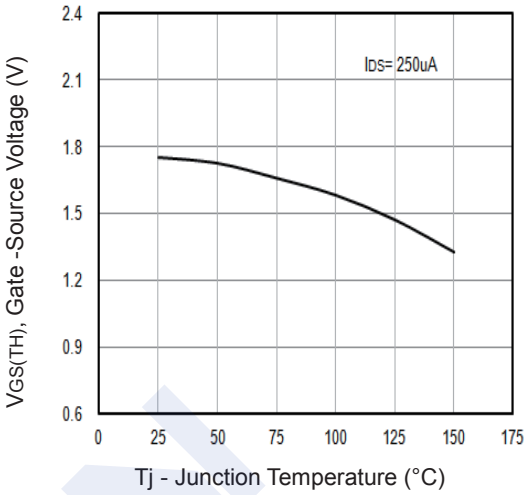

Fig2. Threshold Voltage Vs. Temperature

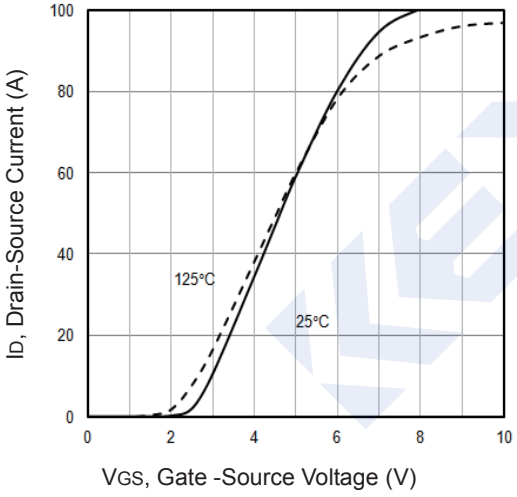

Fig3. Typical Transfer Characteristics

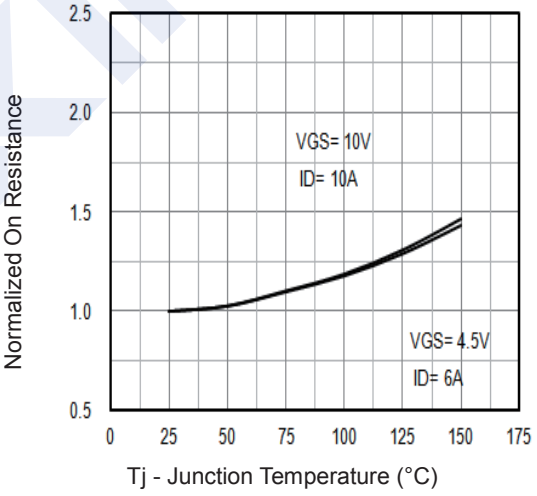

Fig4. Normalized On-Resistance Vs. Temperature

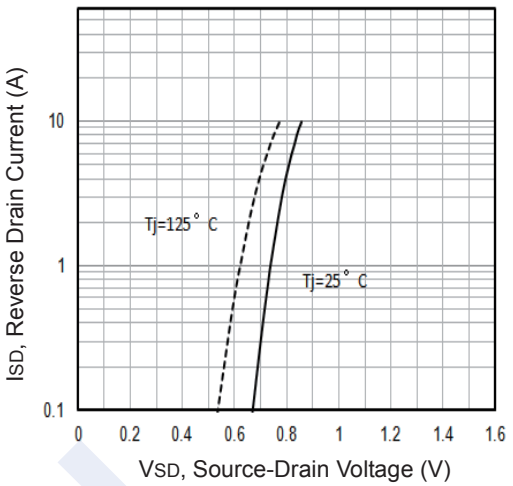

Fig5. Typical Source-Drain Diode Forward Voltage

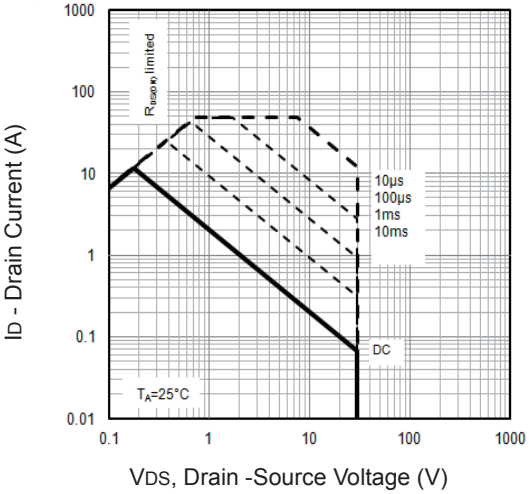

Fig6. Maximum Safe Operating Area

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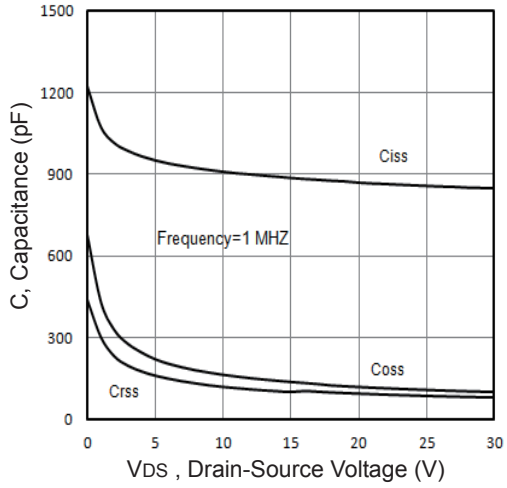

Fig7. Typical Capacitance Vs.Drain-Source Voltage

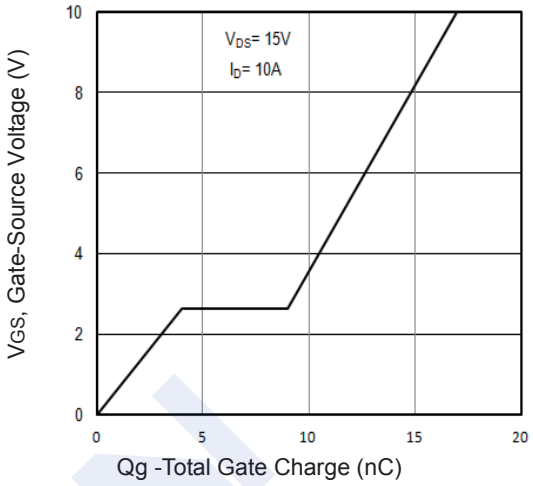

Fig8. Typical Gate Charge Vs.Gate-Source Voltage

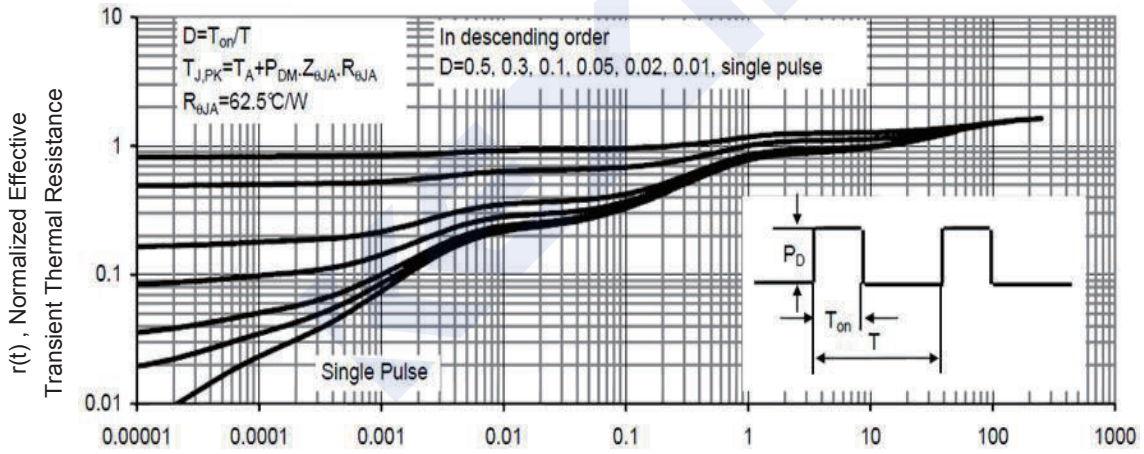

Fig9. T1 ,Transient Thermal Response Curve

Tj - Junction Temperature (°C)

Fig9. Threshold Voltage Vs. Temperature

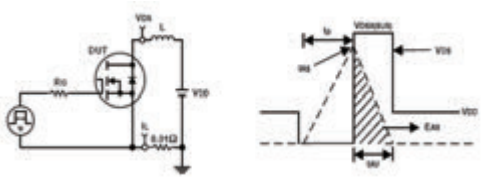

Fig10. Unclamped Inductive Test Circuit and waveforms

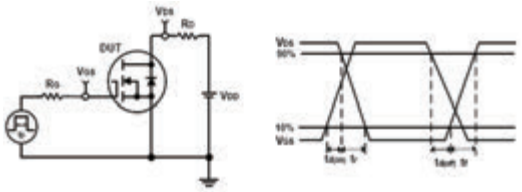

Fig11. Switching Time Test Circuit and waveforms