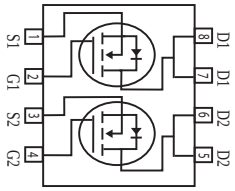
WEITRON

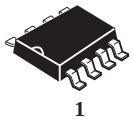
WTK9971

Surface Mount Dual N-Channel Enhancement Mode MOSFET

Pb Lead(Pb)-Free



DRAIN CURRENT
5 AMPERES
DRAIN SOURCE VOLTAGE
60 VOLTAGE



SO-8

Features:

*Super high dense cell design for low $R_{DS(ON)}$
$R_{DS(ON)}$<50mΩ @V_{GS} = 10V
$R_{DS(ON)}$<60mΩ @V_{GS} = 4.5V
*Simple Drive Requirement
*Dual N MOSFET Package
*SO-8 Package

Maximum Ratings (TA=25°C Unless Otherwise Specified)

Rating	Symbol	Value	Unite
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (1) (T_A =25°C) (T_A =70°C)	I_D	5.0 3.2	A
Pulsed Drain Current (2)	I_{DM}	30	A
Power Dissipation (1) (T_A =25°C)	P_D	2	W
Maximax Junction-to-Ambient (1)	$R_{\theta JA}$	62.5	°C/W
Operating Junction and Storage Temperature Range	T_J, Tstg	-55 to 150	°C

Device Marking

WTK9971=9971SS

Electrical Characteristics (T_A=25 °C Unless otherwise noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	60	-	-	V	V_{GS}=0, I_D=250uA
Breakdown Voltage Temperature Coefficient	$\triangle BV_{DSS}/\triangle Tj$	-	0.06	-	V/℃	Reference to 25℃, I_D=1mA
Gate Threshold Voltage	$V_{GS(th)}$	1.0	-	3.0	V	V_{DS}=V_{GS}, I_D=250uA
Forward Transconductance	g_{fs}	-	7	-	S	V_{DS}=10V, I_D=5A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±25V
Drain-Source Leakage Current(Tj=25℃)	I_{DSS}	-	-	1	uA	V_{DS}=60V, V_{GS}=0
Drain-Source Leakage Current(Tj=70℃)		-	-	25	uA	V_{DS}=48V, V_{GS}=0
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	-	-	50	mfl	V_{GS}=10V, I_D=5A
		-	-	60		V_{GS}=4.5V, I_D=2.5A
Total Gate Charge[2]	Q_g	-	32.5	-	nC	I_D=5A V_{DS}=48V V_{GS}=10V
Gate-Source Charge	Q_{gs}	-	4.9	-		
Gate-Drain (“Miller”) Change	Q_{gd}	-	8.8	-		
Turn-on Delay Time[2]	$T_{d(on)}$	-	9.6	-	ns	V_{DS}=30V I_D=5A V_{GS}=10V R_G=3.3fl R_D=6fl
Rise Time	T_r	-	10	-		
Turn-off Delay Time	$T_{d(off)}$	-	30	-		
Fall Time	T_f	-	5.5	-		
Input Capacitance	C_{iss}	-	1658	-	pF	V_{GS}=0V V_{DS}=25V f=1.0MHz
Output Capacitance	C_{oss}	-	156	-		
Reverse Transfer Capacitance	C_{rss}	-	109	-		

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage[2]	V_{SD}	-	-	1.2	V	I_S=1.6A, V_{GS}=0V
Reverse Recovery Time	T_{rr}	-	29.2	-	ns	I_S=5A, V_{GS}=0V dI/dt=100A/?s
Reverse Recovery Charge	Q_{rr}	-	48	-	nC	

Notes: 1. Pulse width limited by Max. junction temperature.

2. Pulse width≦300us, duty cycle≦2%.

3. Surface mounted on 1 in^2 copper pad of FR4 board; 135℃/W when mounted on Min. copper pad.

Characteristics Curve

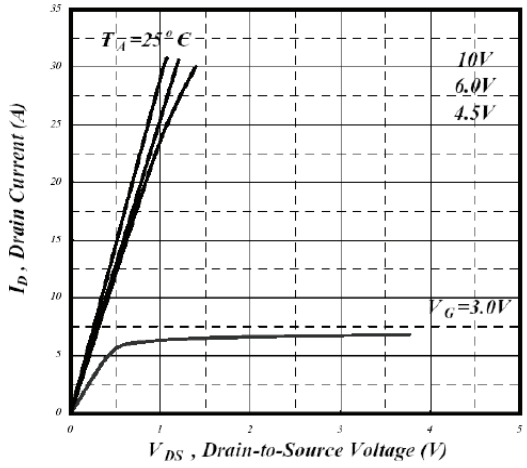


Fig 1. Typical Output Characteristics

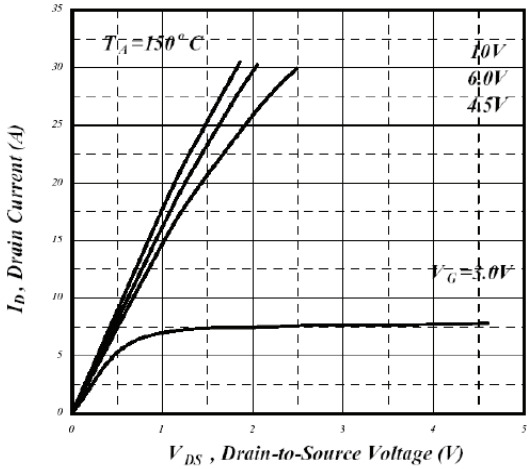


Fig 2. Typical Output Characteristics

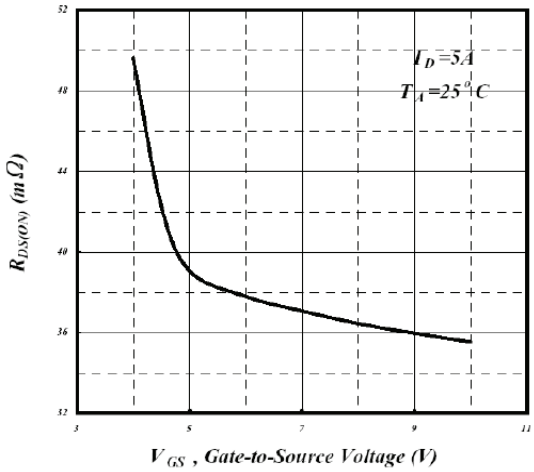


Fig 3. On-Resistance v.s. Gate Voltage

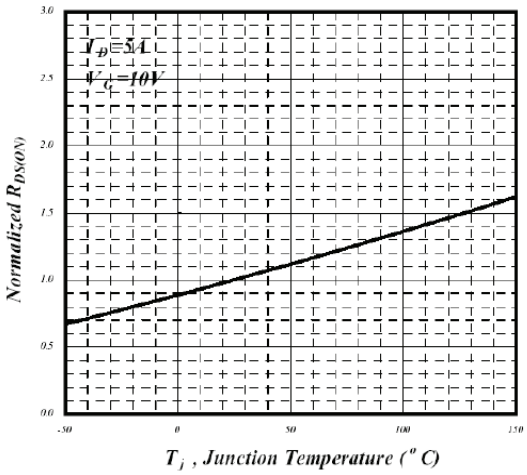


Fig 4. Normalized On-Resistance v.s. Junction Temperature

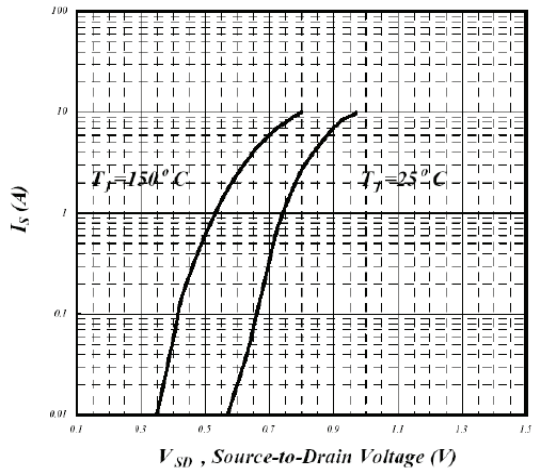


Fig 5. Forward Characteristics of Reverse Diode

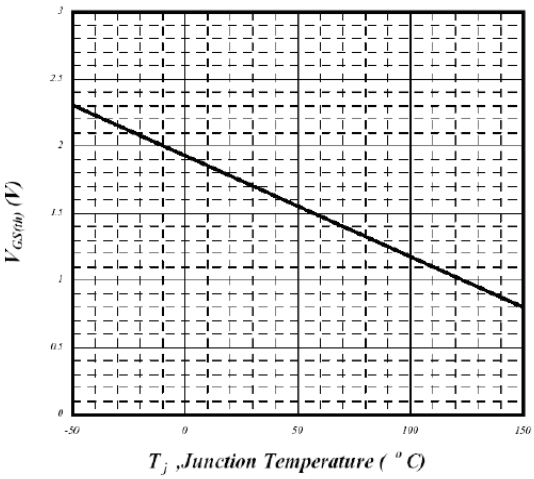


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

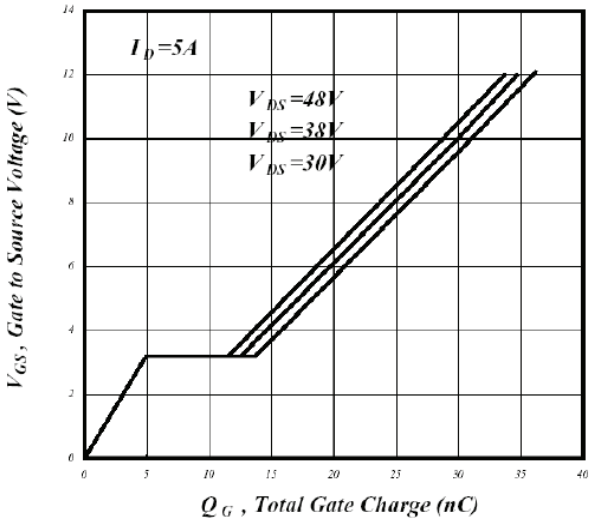


Fig 7. Gate Charge Characteristics

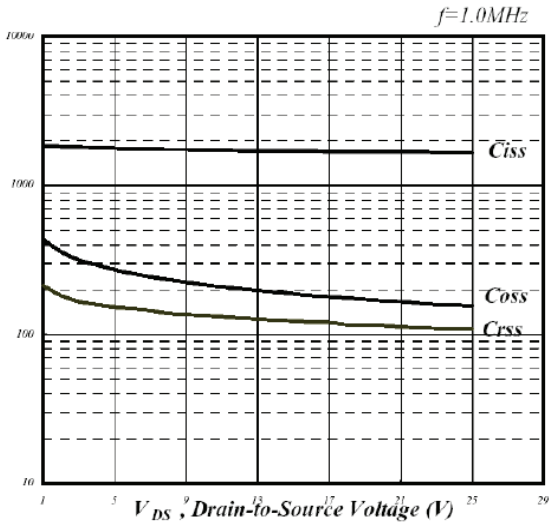


Fig 8. Typical Capacitance Characteristics

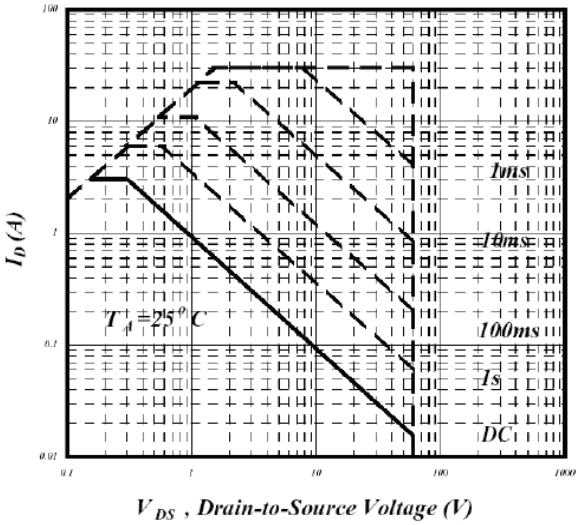


Fig 9. Maximum Safe Operating Area

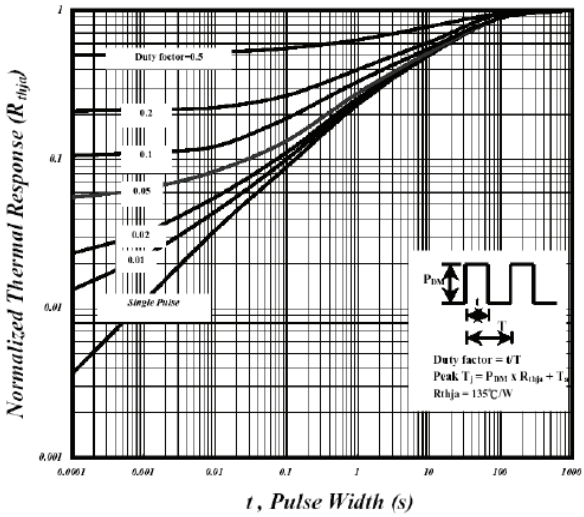


Fig 10. Effective Transient Thermal Impedance

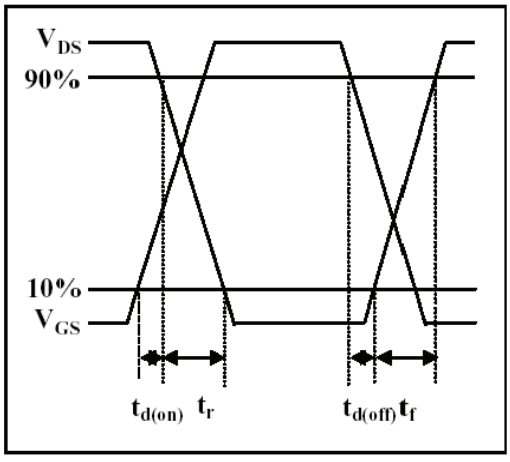


Fig 11. Switching Time Waveform

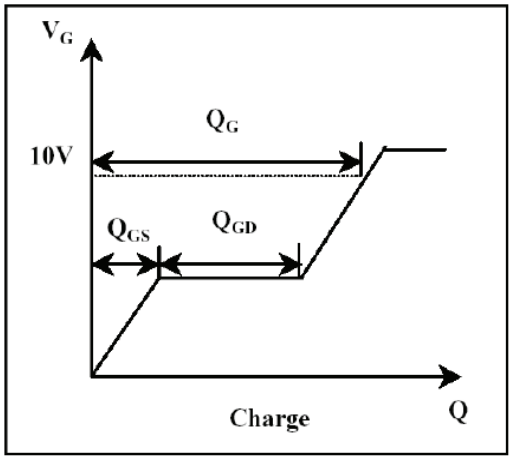
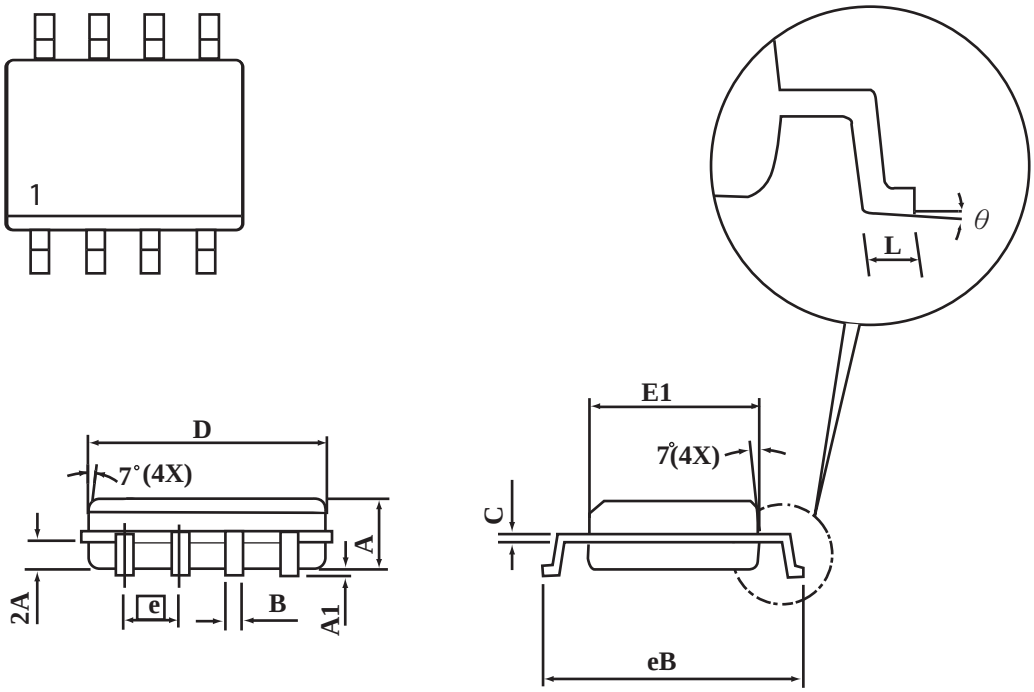


Fig 12. Gate Charge Waveform

SO-8 Package Outline Dimensions

Unit:mm



SYMBOLS	MILLIMETERS	
	MIN	MAX
A	1.35	1.75
A1	0.10	0.20
B	0.35	0.45
C	0.18	0.23
D	4.69	4.98
E1	3.56	4.06
eB	5.70	6.30
e	1.27 BSC	
L	0.60	0.80
θ	0°	8°