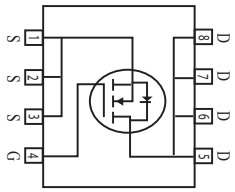
WEITRON

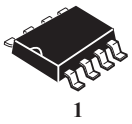
WTK9410

Surface Mount N-Channel Enhancement Mode MOSFET

Lead(Pb)-Free



DRAIN CURRENT
18 AMPERES
DRAIN SOURCE VOLTAGE
30 VOLTAGE



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SOP-8

Features:

* Simple Drive Requirement.
* Low On-Resistance.
* Fast Switching.
* Super high dense cell design for low $R_{DS(ON)}$
  $R_{DS(ON)}$<5.5mΩ@V_{GS}=10V
  $R_{DS(ON)}$<6.2mΩ@V_{GS}=4.5V
  $R_{DS(ON)}$<8.0mΩ@V_{GS}=2.5V
* Rugged and Reliable.
* SOP-8 Package.

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

Rating	Symbol	Value	Unite
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current[1] (T_A =25°C) (T_A =70°C)	I_D	18 15	A
Pulsed Drain Current[2]	I_{DM}	80	A
Power Dissipation(T_A =25°C)	P_D	2.5	W
Maximax Junction-to-Ambient[1]	$R_{\theta JA}$	50	°C/W
Junction Temperature Range	T_J	+150	°C
Storage Temperature Range	T_{stg}	-55 to +150	°C

Device Marking

WTK9410 = 9410SC

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

Characteristic	Symbol	Min	Typ	Max	Unit
Static (2)					
Drain-Source Breakdown Voltage V_{GS}=0V, I_D=250μA	$V_{(BR)DSS}$	30	-	-	V
Gate-Source Threshold Voltage V_{DS}=V_{GS}, I_D=250μA	$V_{GS(th)}$	-	-	1.2	V
Gate-Source Leakage Current V_{DS}=0V, V_{GS}=±12V	I_{GSS}	-	-	±100	nA
Drain-Source Leakage Current @Tj=25C, V_{DS}=30V,V_{GS}=0V @Tj=70C, V_{DS}=24V,V_{GS}=0V	I_{DSS}	-	-	1 25	μA
Drain-Source On-Resistance[3] V_{GS}=10V, I_D=18A V_{GS}=4.5V, I_D=12A V_{GS}=2.5V, I_D=6A	$r_{DS(on)}$	-	-	5.5 6.2 8.0	mΩ
Forward Transconductance V_{DS}=10V, I_D=12A	gfs	-	47	-	S
Dynamic (3)					
Input Capacitance V_{DS}=25V,V_{GS}=0V, f=1.0MHZ	Ci_{ss}	-	5080	8100	pF
Output Capacitance V_{DS}=25V,V_{GS}=0V, f=1.0MHZ	C_{oss}	-	660	-	
Reverse Transfer Capacitance V_{DS}=25V,V_{GS}=0V, f=1.0MHZ	C_{rss}	-	400	-	

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

Characteristic	Symbol	Min	Typ	Max	Unit
Switching					
Turn-On Delay Time V_{DS}=15V, V_{GS}=10V, I_D=1A, R_G=3.3Ω, R_D=15Ω	$T_{d(on)}$	-	16	-	nS
Rise Time V_{DS}=15V, V_{GS}=10V, I_D=1A, R_G=3.3Ω, R_D=15Ω	T_r	-	12	-	
Turn-Off Time V_{DS}=15V, V_{GS}=10V, I_D=1A, R_G=3.3Ω, R_D=15Ω	$T_{d(off)}$	-	96	-	
Fall Time V_{DS}=15V, V_{GS}=10V, I_D=1A, R_G=3.3Ω, R_D=15Ω	T_f	-	30	-	
Total Gate Charge[3] V_{DS}=24V, V_{GS}=4.5V, I_D=18A	Qg	-	59	95	nC
Gate-Source Charge V_{DS}=24V, V_{GS}=4.5V, I_D=18A	Qgs	-	10	-	
Gate-Drain Charge V_{DS}=24V, V_{GS}=4.5V, I_D=18A	Qgd	-	23	-	

Source-Drain Diode Characteristics

Forward On Voltage[3] V_{GS}=0V,I_S=18A	V_{SD}	-	-	1.2	V
Reverse Recovery Time[3] V_{GS}=0V,I_S=18A, dI/dt=100A/μs	T_{rr}	-	43	-	nS
Reverse Recovery Charge V_{GS}=0V,I_S=18A, dI/dt=100A/μs	Q_{rr}	-	39	-	nC

Note: 1. Surface mounted on 1 in^2 copper pad of FR4 board; 125°C/W when mounted on Min. copper pad.
2. Pulse width limited by Max. junction temperature.
3. Pulse width ≤ 300us, duty cycle ≤ 2%.

Characteristics Curve

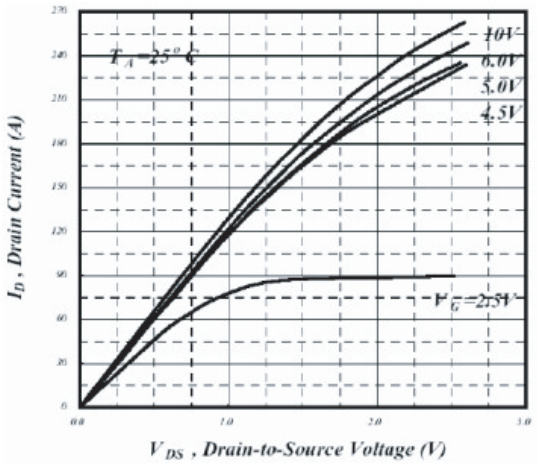


Fig 1. Typical Output Characteristics

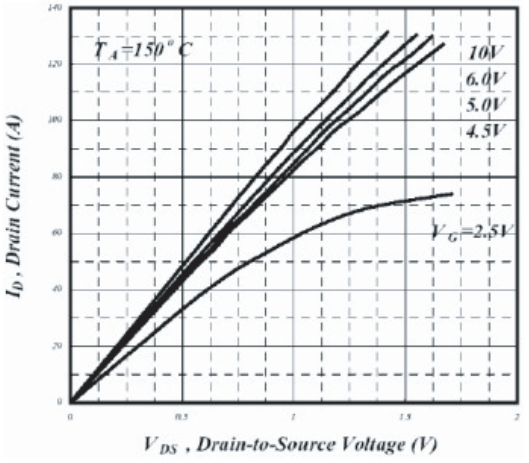


Fig 2. Typical Output Characteristics

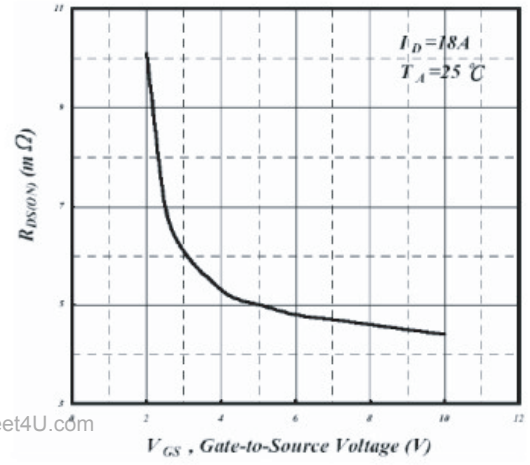


Fig 3. On-Resistance v.s. Gate Voltage

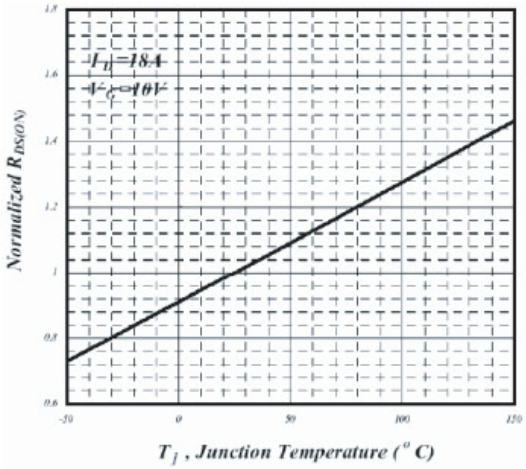


Fig 4. Normalized On-Resistance v.s. Junction Temperature

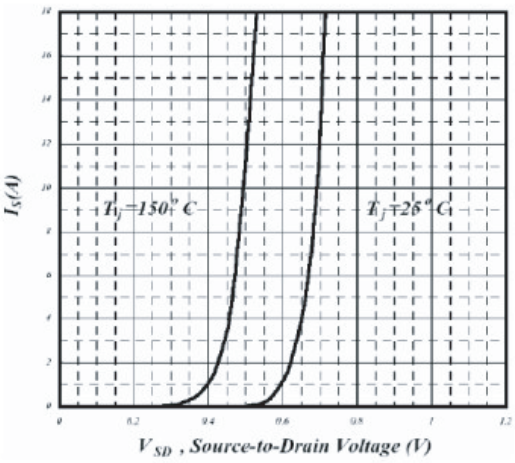


Fig 5. Forward Characteristics of Reverse Diode

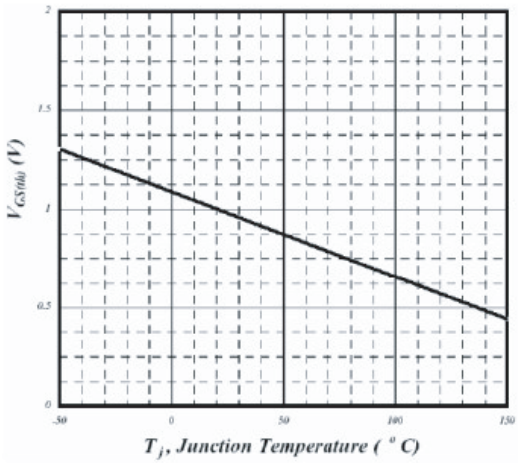


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

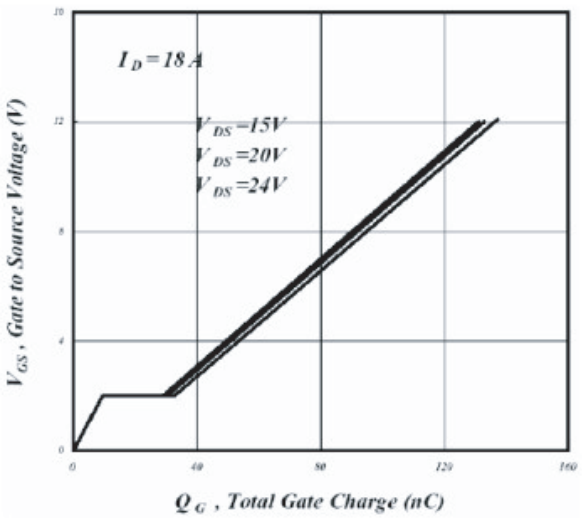


Fig 7. Gate Charge Characteristics

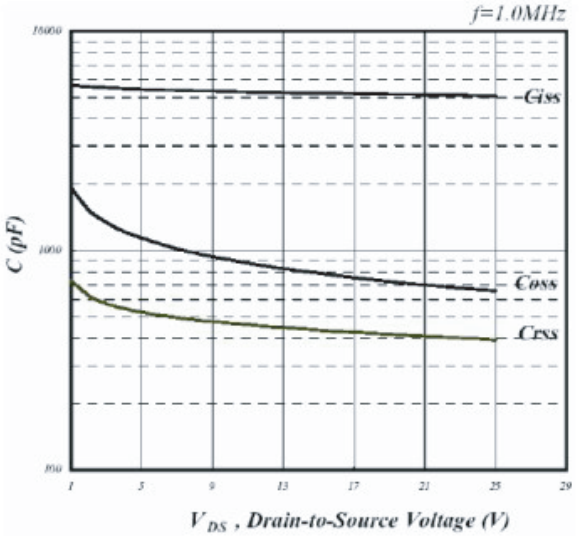


Fig 8. Typical Capacitance Characteristics

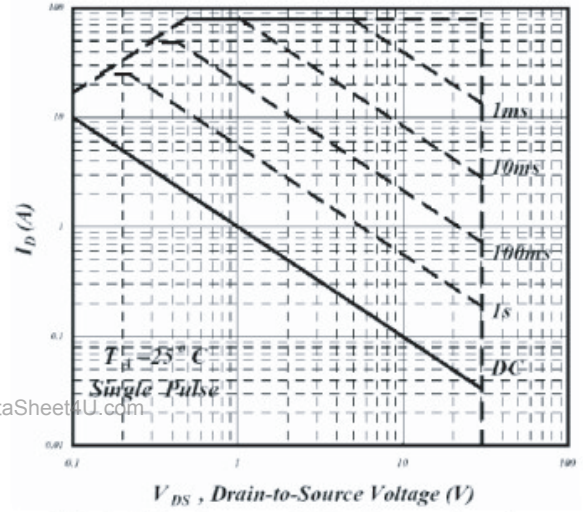


Fig 9. Maximum Safe Operating Area

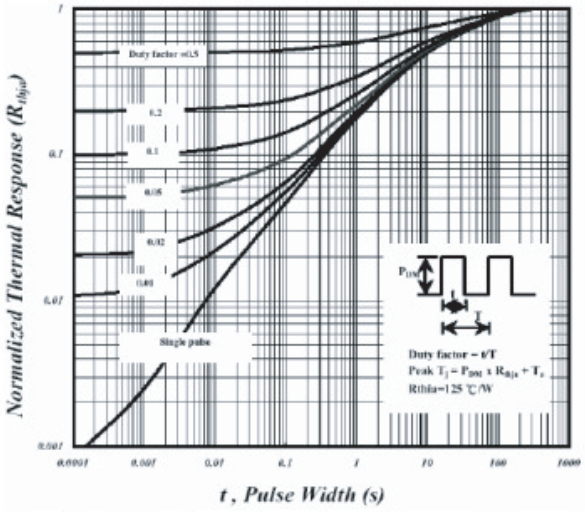


Fig 10. Effective Transient Thermal Impedance

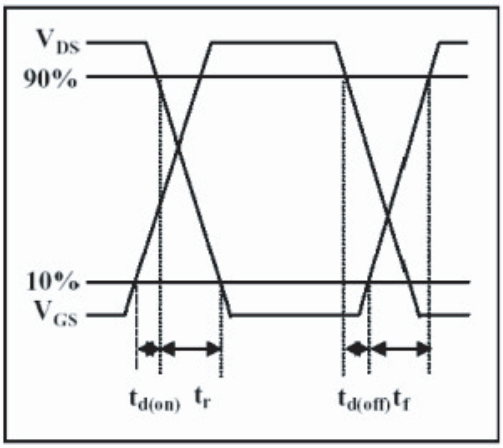


Fig 11. Switching Time Waveform

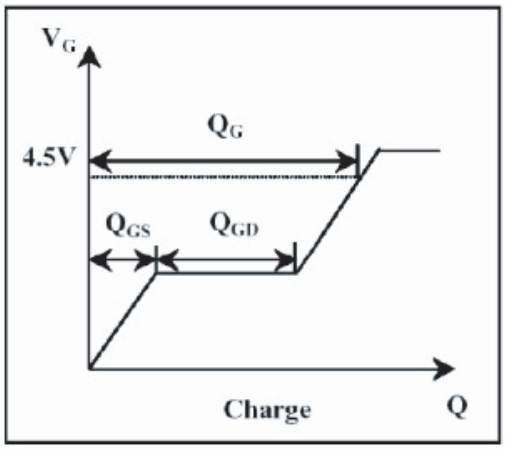
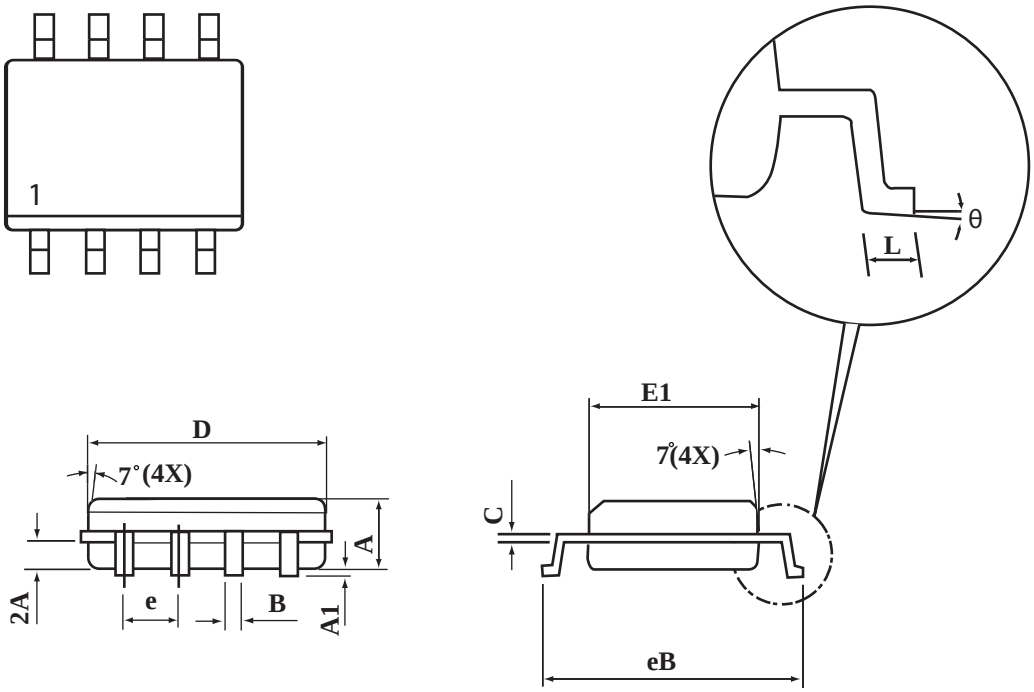


Fig 12. Gate Charge Waveform

SOP-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	1.27BSC	
L	0.60	0.80
θ	0°	8°