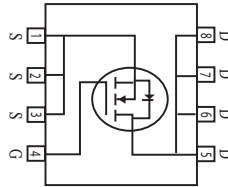


Surface Mount N-Channel Enhancement Mode MOSFET

 **Lead(Pb)-Free**



DRAIN CURRENT
13.8 AMPERES
DRAIN SOURCE VOLTAGE
30 VOLTAGE

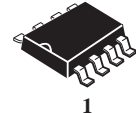
Description:

The WTK4424 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.

The SOP-8 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.

Features:

- *Low On-Resistance
- *High Vgs Max Rating Voltage
- *Surface Mount Package



1

SOP-8

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ³	$I_D @ T_A=25^\circ C$	13.8	A
Continuous Drain Current ³	$I_D @ T_A=70^\circ C$	11	A
Pulsed Drain Current ¹	I_{DM}	50	A
Total Power Dissipation	$P_D @ T_A=25^\circ C$	2.5	W
Linear Derating Factor		0.02	W/ $^\circ C$
Operating Junction and Storage Temperature Range	T_j, T_{stg}	-55 ~ +150	$^\circ C$

Device Marking

WTK4424 = 4424SC

Electrical Characteristics(T_j = 25°C Unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV _{DSS}	30	-	-	V	V _{GS} =0, I _D =250uA
Breakdown Voltage Temperature Coefficient	ΔBV _{DSS} / ΔT _j	-	0.02	-	V/°C	Reference to 25°C, 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}	-	21	-	S	V _{DS} =10V, I _D =13A
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} = ±20V
Drain-Source Leakage Current(T _j =25°C)	I _{DSS}	-	-	1	uA	V _{DS} =30V, V _{GS} =0
Drain-Source Leakage Current(T _j =70°C)		-	-	25	uA	V _{DS} =24V, V _{GS} =0
Static Drain-Source On-Resistance ²	R _{DS(on)}	-	-	9	mΩ	V _{GS} =10V, I _D =13A
		-	-	14		V _{GS} =4.5V, I _D =10A
Total Gate Charge ²	Q _g	-	23	35	nC	I _D =13A V _{DS} =24V V _{GS} =4.5V
Gate-Source Charge	Q _{gs}	-	6	-		
Gate-Drain ("Miller") Change	Q _{gd}	-	15	-		
Turn-on Delay Time ²	T _{d(on)}	-	13	-	ns	V _{DS} =25V I _D =1A V _{GS} =10V R _G =3.3Ω R _D =15Ω
Rise Time	T _r	-	9	-		
Turn-off Delay Time	T _{d(off)}	-	35	-		
Fall Time	T _f	-	17	-		
Input Capacitance	C _{iss}	-	1920	3070	pF	V _{GS} =0V V _{DS} =25V f=1.0MHz
Output Capacitance	C _{oss}	-	410	-		
Reverse Transfer Capacitance	C _{rss}	-	300	-		
Gate Resistance	R _g	-	0.9	-		

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage ²	V _{SD}	-	-	1.2	V	I _S =2.1A, V _{GS} =0V
Reverse Recovery Time ²	T _{rr}	-	33	-	ns	I _S =13A, V _{GS} =0V di/dt=100A/fls
Reverse Recovery Charge	Q _{rr}	-	26	-	nC	

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

2. Pulse width ≤ 300us, duty cycle ≤ 2%.

3. Surface mounted on 1 in² copper pad of FR4 board; 125°C/W when mounted on Min. copper pad.

WTK4424

WEITRON

Characteristics Curve

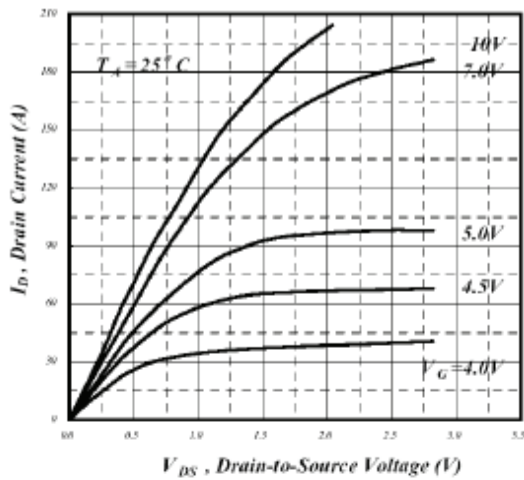


Fig 1. Typical Output Characteristics

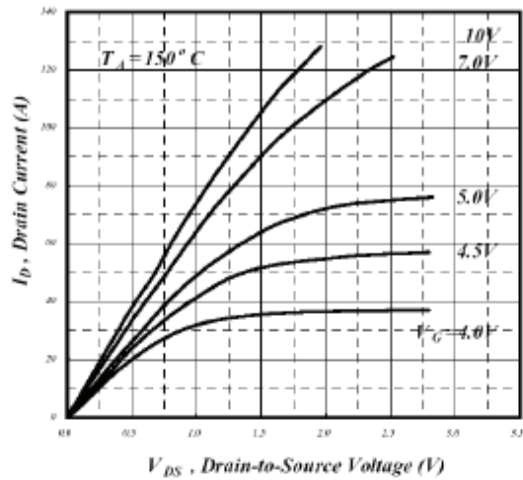


Fig 2. Typical Output Characteristics

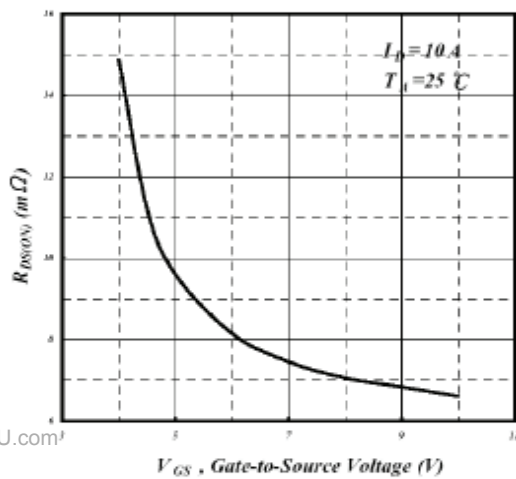


Fig 3. On-Resistance v.s. Gate Voltage

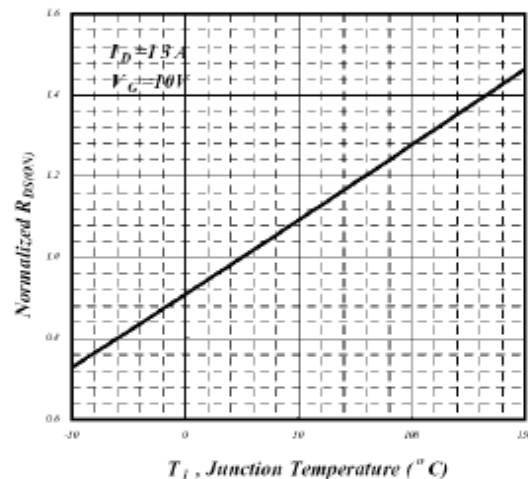


Fig 4. Normalized On-Resistance v.s. Junction Temperature

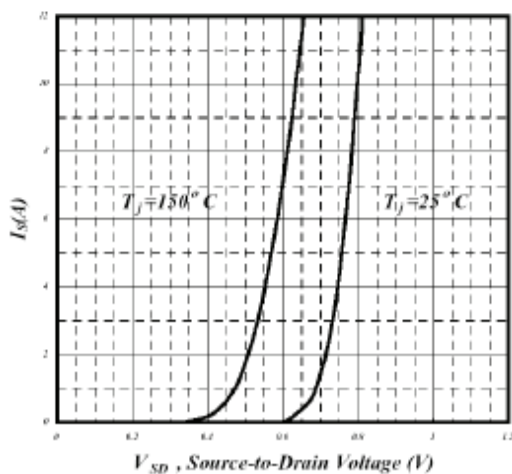


Fig 5. Forward Characteristics of Reverse Diode

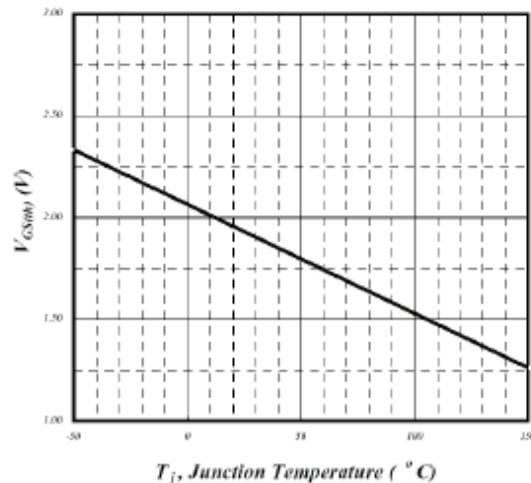


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

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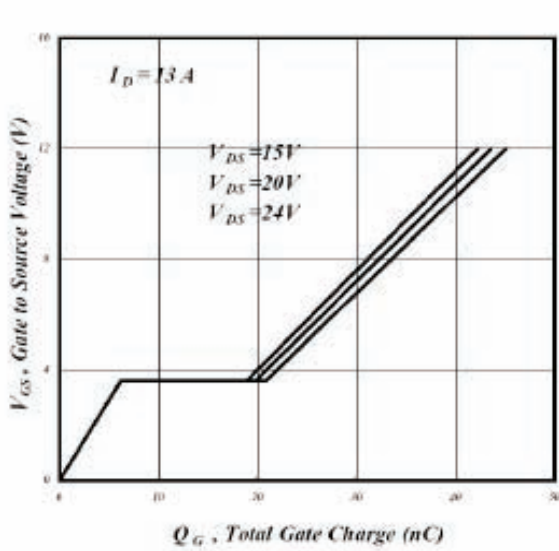


Fig 7. Gate Charge Characteristics

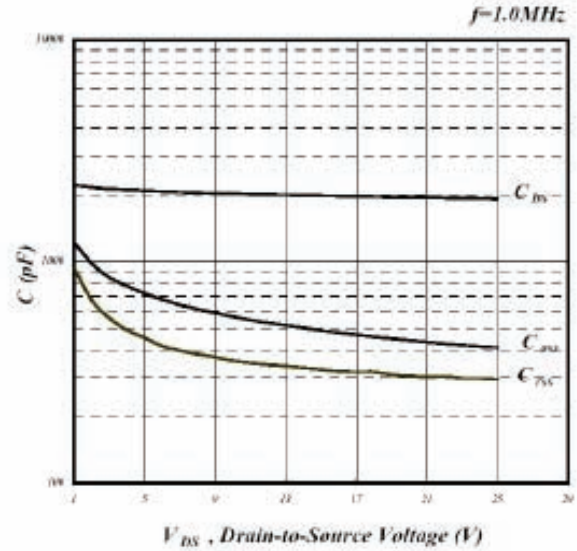


Fig 8. Typical Capacitance Characteristics

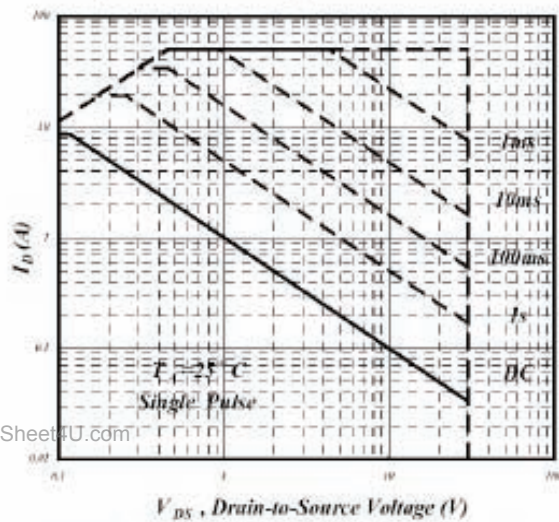


Fig 9. Maximum Safe Operating Area

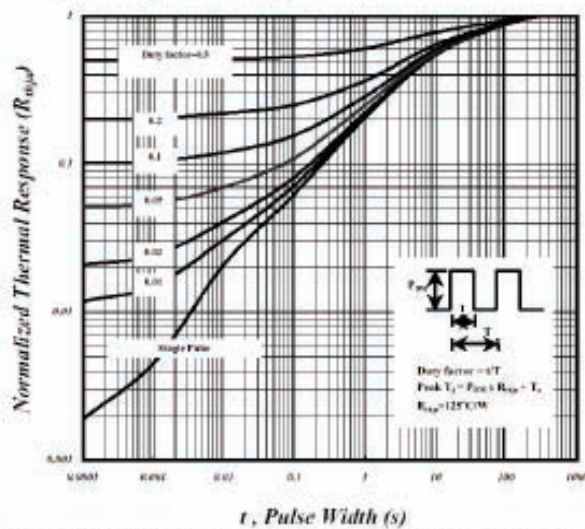


Fig 10. Effective Transient Thermal Impedance

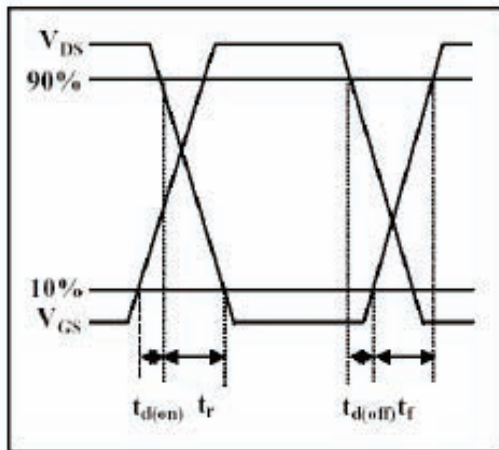


Fig 11. Switching Time Waveform

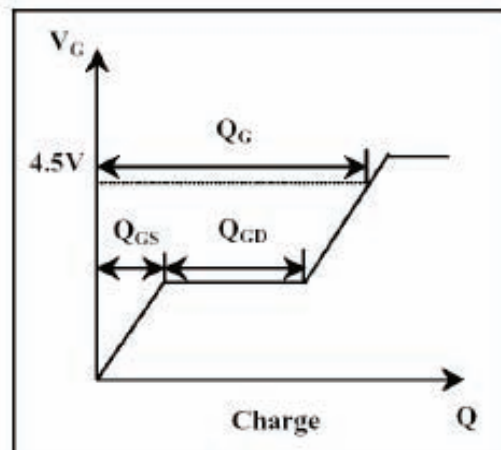
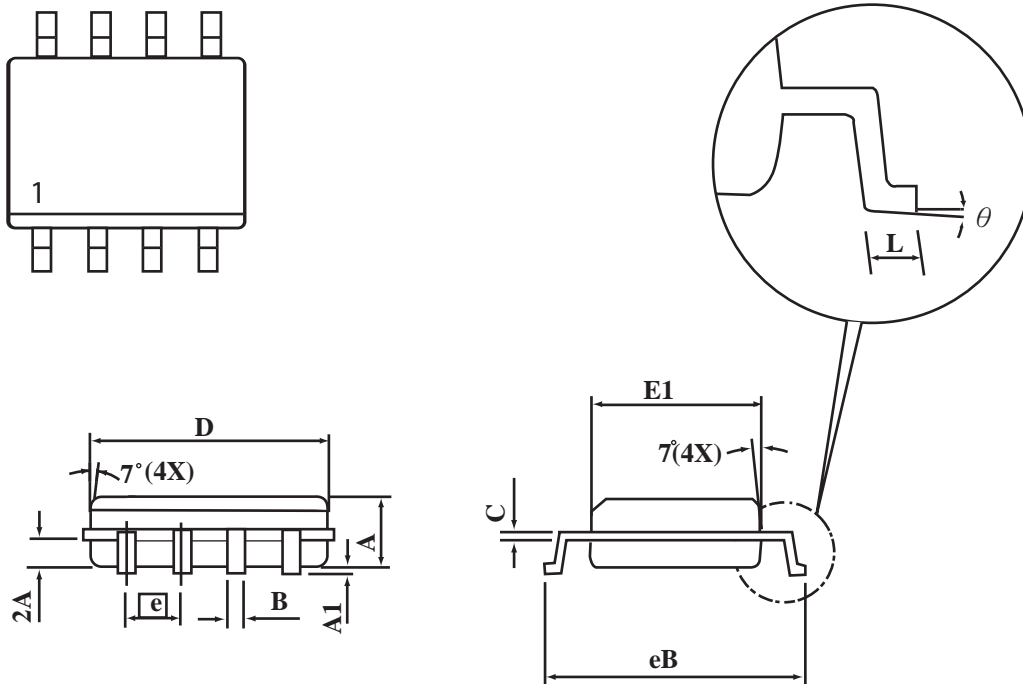


Fig 12. Gate Charge Waveform

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WTK4424**WEITRON****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°

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