WEITRON

Surface Mount N-Channel
Enhancement Mode MOSFET

Pb **Lead(Pb)-Free**

**DRAIN CURRENT
13.8 AMPERES
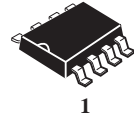DRAIN SOURCE VOLTAGE
30 VOLTAGE**

1

SOP-8

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

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℃	13.8	A
Continuous Drain Current[3]	I_D @T_A=70℃	11	A
Pulsed Drain Current[1]	I_{DM}	50	A
Total Power Dissipation	P_D @T_A=25℃	2.5	W
Linear Derating Factor		0.02	W/℃
Operating Junction and Storage Temperature Range	Tj, Tstg	-55 ~ +150	℃

Device Marking

WTK4424 = 4424SC

Electrical Characteristics(Tj = 25℃ 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	$\triangle BV_{DSS}/\triangle Tj$	-	0.02	-	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}	-	21	-	S	$V_{DS}=10V$, $I_D=13A$
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	$V_{GS}=±20V$
Drain-Source Leakage Current(Tj=25℃)	I_{DSS}	-	-	1	uA	$V_{DS}=30V$, $V_{GS}=0$
Drain-Source Leakage Current(Tj=70℃)		-	-	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	-	Ω	f=1.0MHz

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 in[2] copper pad of FR4 board; 125℃/W when mounted on Min. copper pad.
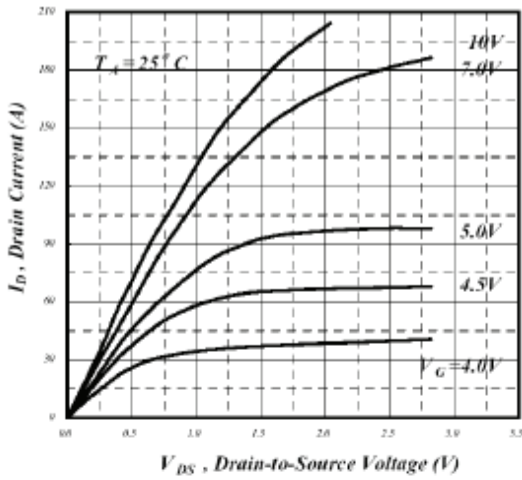
Characteristics Curve
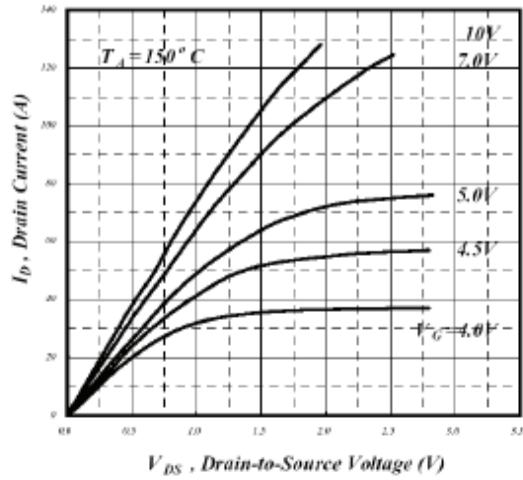

Fig 1. Typical Output Characteristics

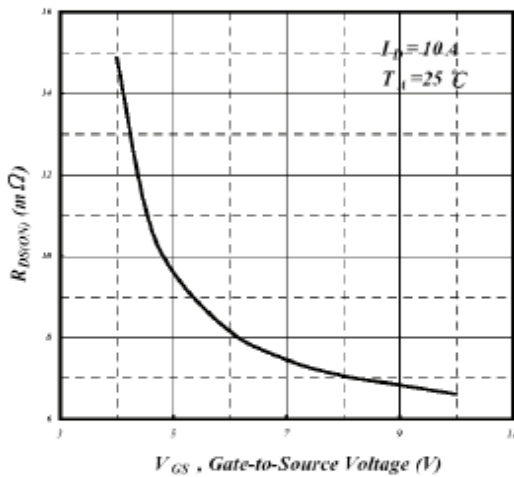Fig 2. Typical Output Characteristics
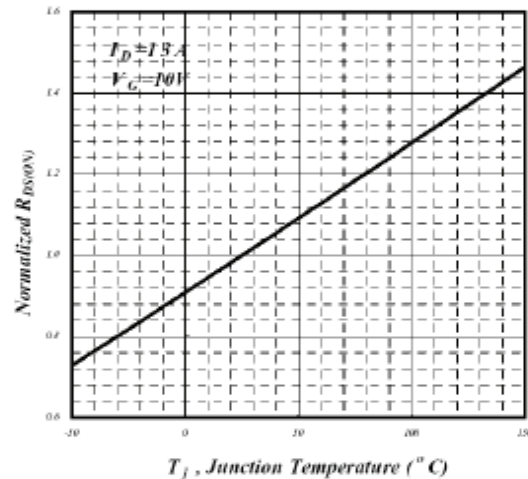

Fig 3. On-Resistance v.s. Gate Voltage

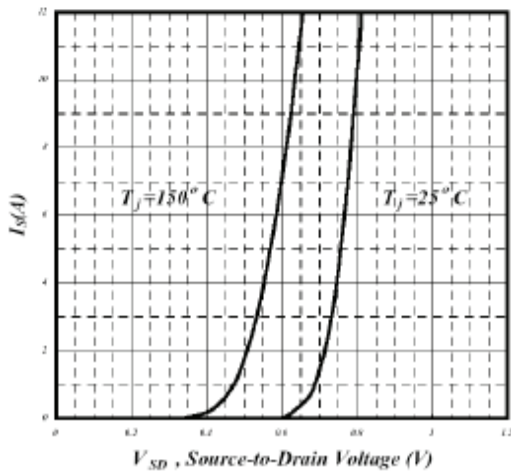Fig 4. Normalized On-Resistance
v.s. Junction Temperature

Fig 5. Forward Characteristics of
Reverse Diode
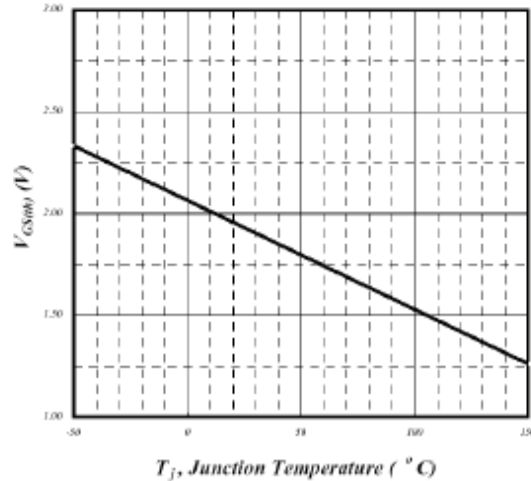

Fig 6. Gate Threshold Voltage v.s.
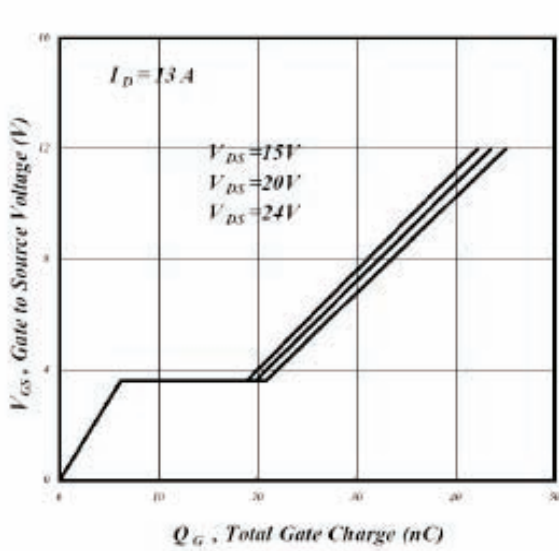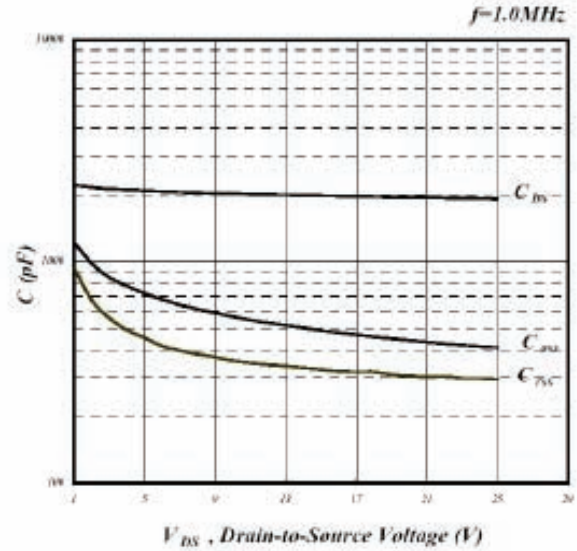Junction Temperature

Fig 7. Gate Charge Characteristics
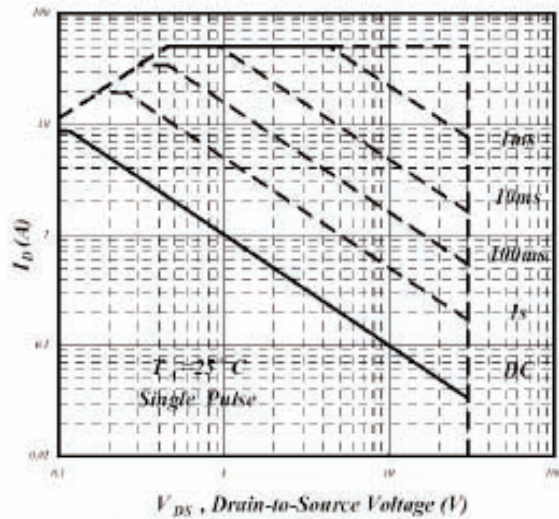

Fig 8. Typical Capacitance Characteristics

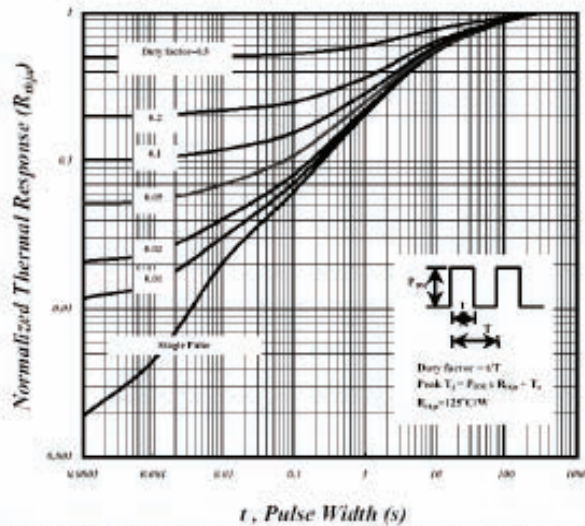

Fig 9. Maximum Safe Operating Area

Fig 10. Effective Transient Thermal Impedance

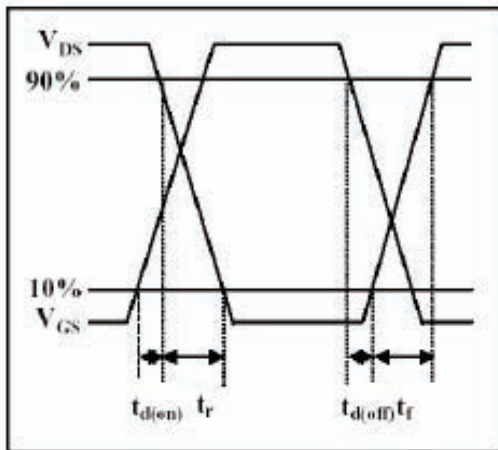**Fig 11. Switching Time Waveform**

Fig 12. Gate Charge Waveform
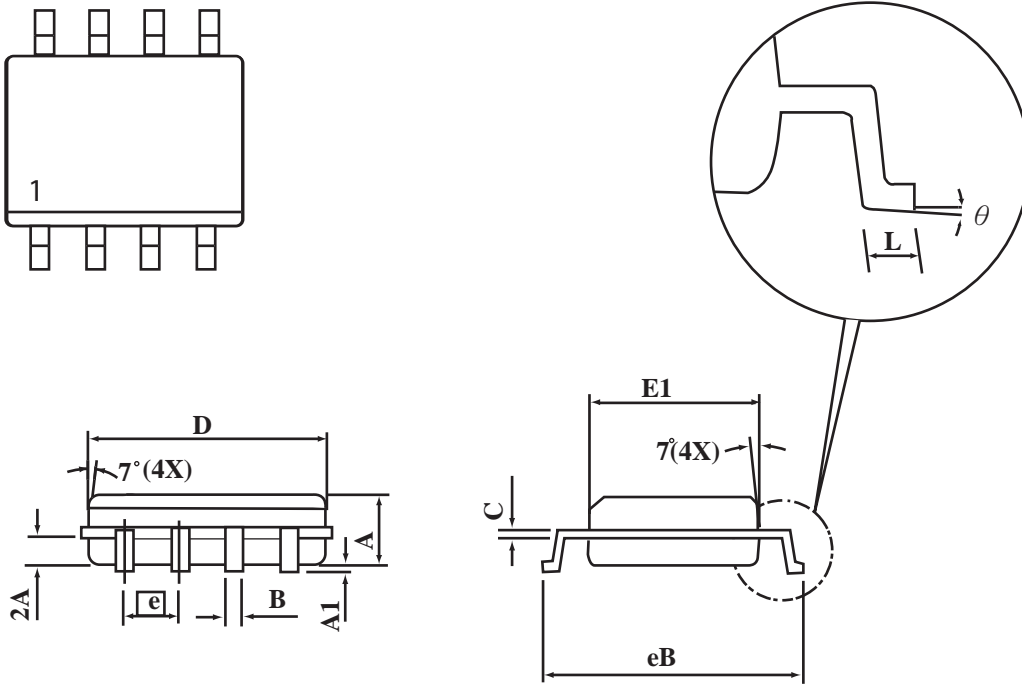
SO-8 Package Outline Dimensions

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°