

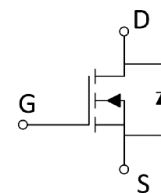
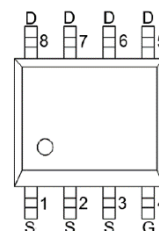
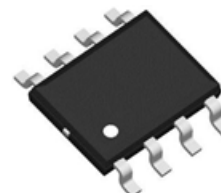
40V_{DS}/±20V N-Channel Enhancement Mode MOSFET

Features

- $V_{DS}=40V, I_D=10A$
- $R_{DS(ON)}=12m\Omega$ (TYP.) $V_{GS}=10V$
- $R_{DS(ON)}=16m\Omega$ (TYP.) $V_{GS}=4.5V$
- $R_{DS(ON)}=22m\Omega$ (TYP.) $V_{GS}=2.5V$
- Reliable and Rugged
- Avalanche Rated
- Low On-Resistance

Applications

- Load Switch
- Power management in portable/desktop PCs
- DC/DC conversion

SOP8


Ordering Information

Device	package	Device Marking	Package Qty.
FKS4004	SOP-8	S4004	3000/PCS

Absolute Maximum Ratings ($T_C=25^{\circ}C$, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage ($V_{GS}=0V$)	V_{DS}	40	V
Gate-Source Voltage ($V_{GS}=0V$, static)	V_{GS}	±20	V
Continuous Drain Current ($T_C=25^{\circ}C$)	I_D	10	A
Continuous Drain Current ($T_C=100^{\circ}C$)		8	A
Pulsed Drain Current	I_{DM}	60	A
Single Pulsed Avalanche Energy	E_{AS}	69	mJ
Maximum Power Dissipation ($T_C=25^{\circ}C$)	P_D	6.4	W
Maximum Power Dissipation ($T_C=100^{\circ}C$)		3.1	W
Operating, Storage Temperature Range	T_J, T_{STG}	-55~150	$^{\circ}C$

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	-	14	-	$^{\circ}\text{C}/\text{W}$
Thermal Resistance,Junction-to-Ambient	$R_{\theta JA}$	-	59	-	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	-	-	1	μA
Gate -Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.8	1.1	1.4	V
Drain-Source On-stage Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=1A$	-	5.5	8	m Ω
		$V_{GS}=4.5V, I_D=2A$	-	7	12	
		$V_{GS}=2.5V, I_D=5A$	-	12	16	

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	$V_{DS}=15V$ $V_{GS}=0V$ $f=1\text{MHz}$	-	1710	-	pF
Output capacitance	C_{oss}		-	225	-	
Reverse transfer capacitance	C_{rss}		-	205	-	
Gate Resistance	R_g	$f=1\text{MHz}$	-	1.6	-	Ω
Total Gate Charge	Q_g	$V_{DS}=15V$ $V_{GS}=10V$ $I_D=20A$	-	39	-	nC
Gate Source Charge	Q_{gs}		-	2.7	-	
Gate Drain Charge	Q_{gd}		-	11	-	
Turn-on delay Time	$t_{d(on)}$	$V_{GS}=10V$ $V_{DS}=15V$ $R_L=3.5\Omega$ $R_G=6.8\Omega$	-	14	-	ns
Rise time	t_r		-	27	-	
Turn-off delay Time	$t_{d(off)}$		-	65	-	
Fall time	t_f		-	19	-	

Reverse Diode Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Body Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=1A$	-	0.8	1	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_{SD}=20A$ $d_i/d_t=100A/\mu s$	-	16	-	ns
Reverse Recovery Charge	Q_{rr}		-	21	-	nC

Electrical Characteristics Diagrames

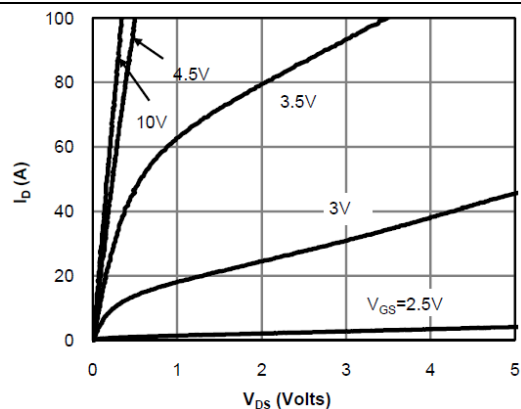
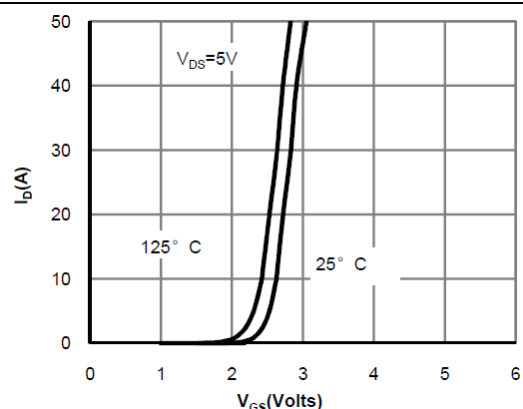
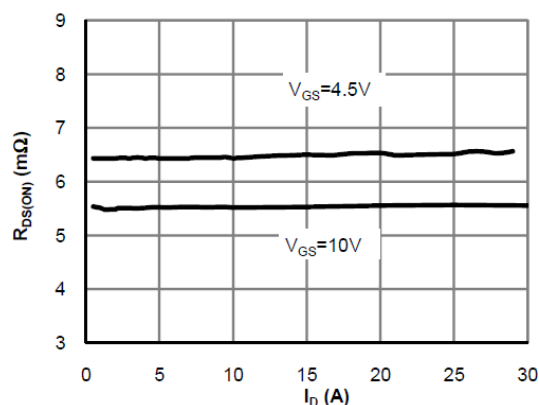
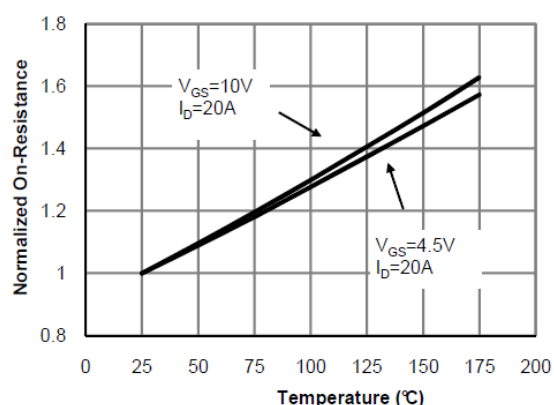
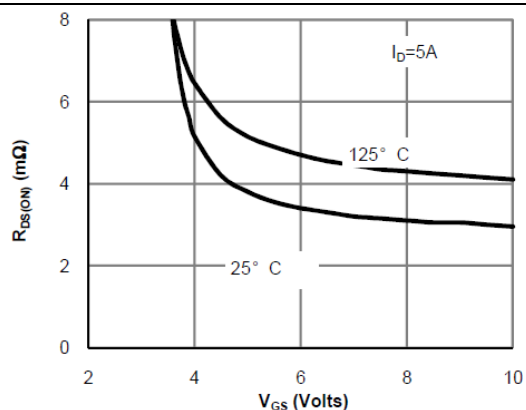
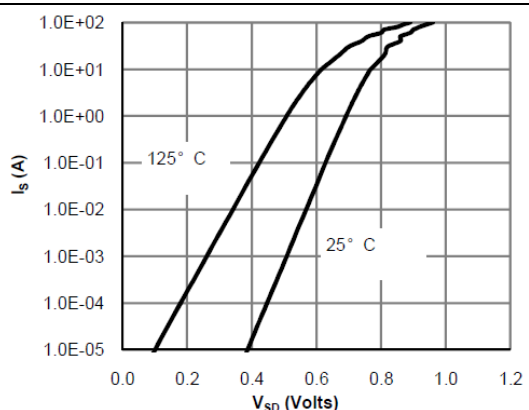
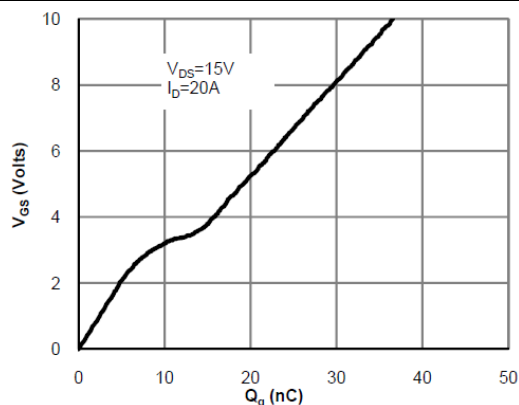
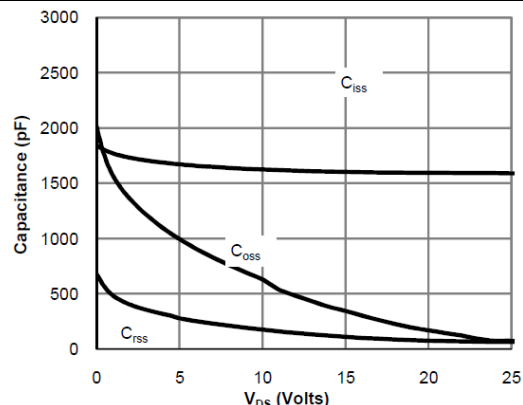
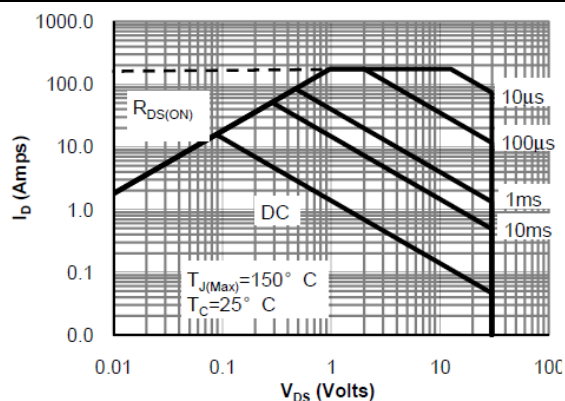
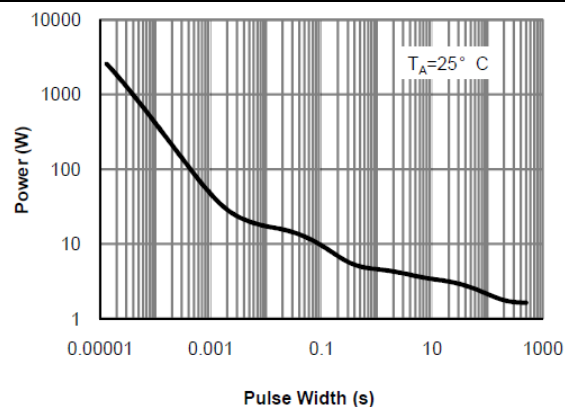
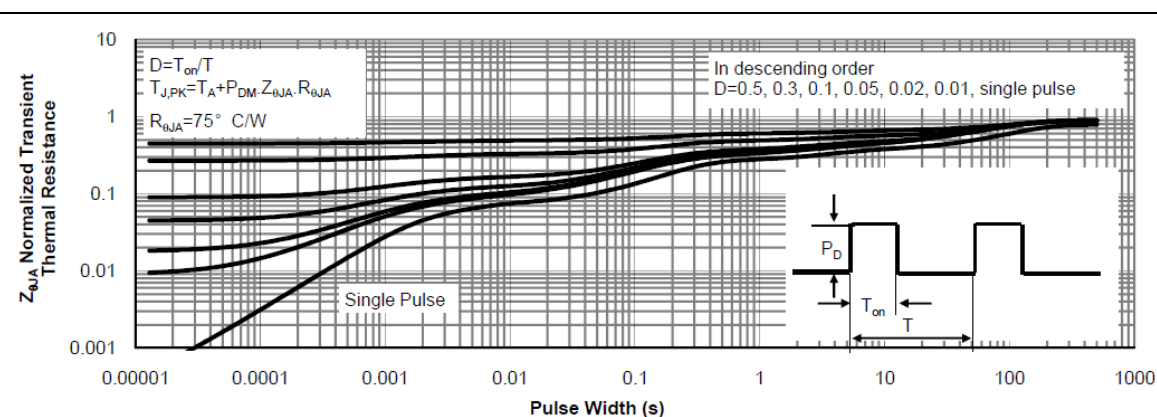
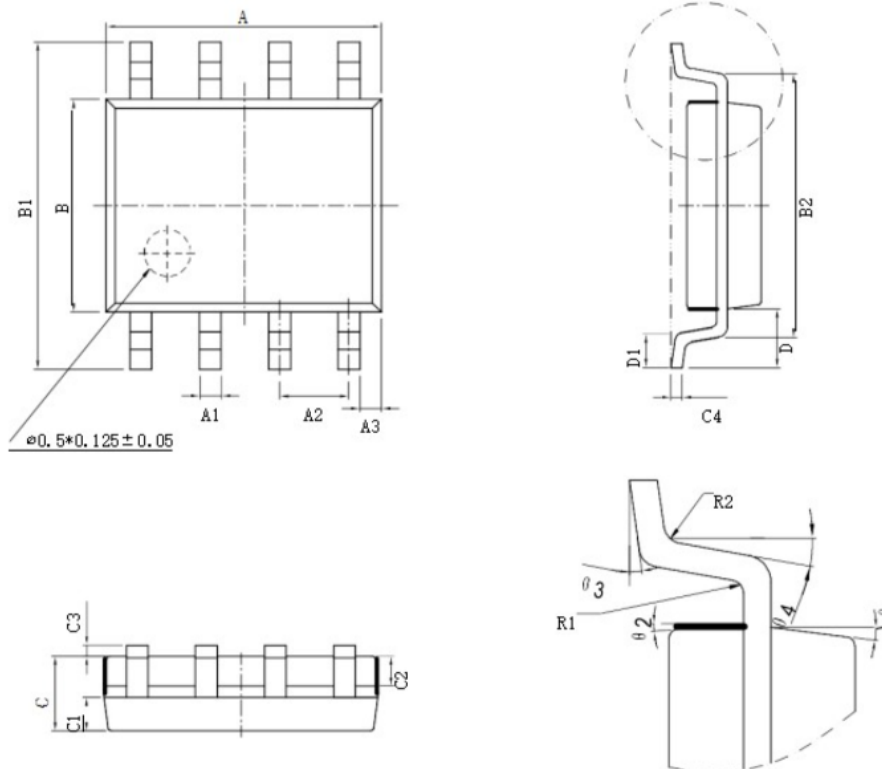
Figure 1. On-Regin Characteristics

Figure 2. Transfer Characteristics

Figure 3. On-Resistance vs. Drain Current and Gate Voltage

Figure 4. On-Resistance vs. Junction Temperature

Figure 5. On-Resistance vs. Gate-Source Voltage

Figure 6. Body-Diode Characteristics


Figure 7. Gate-Charge Characteristics

Figure 8. Capacitance Characteristics

Figure 9. Maximum Forward Biased Safe Operating Area

Figure 10. Single Pulse Power Rating Junction-to-Ambient

Figure 11. Normalized Maximum Transient Thermal Impedance


Physical Dimensions

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符号	尺寸 (mm)		符号	尺寸 (mm)	
	最小值	最大值		最小值	最大值
A	4.80	5.00	C3	0.05	0.20
A1	0.356	0.456	C4	0.203	0.233
A2	1.27 TYP		D	1.05 TYP	
A3	0.345 TYP		D1	0.40	0.80
B	3.80	4.00	R1	0.20 TYP	
B1	5.80	6.20	R2	0.20 TYP	
B2	5.00 TYP		θ1	17° TYP4	
C	1.30	1.60	θ2	13° TYP4	
C1	0.55	0.65	θ3	0° ~ 8°	
C2	0.55	0.65	θ4	4° ~ 12°	

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