30V_{DS}/±20V N-Channel Enhancement Mode MOSFET

Features

- V_{DS}=30V,I_D=13A
- $R_{DS(ON)}$=12mΩ（TYP.）V_{GS}=10V
- $R_{DS(ON)}$=19 mΩ（TYP.）V_{GS}=4.5V
- $R_{DS(ON)}$=25mΩ（TYP.）V_{GS}=2.5V
- Reliable and Rugged
- Avalanche Rated
- Low On-Resistance

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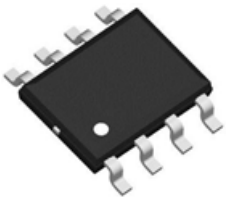
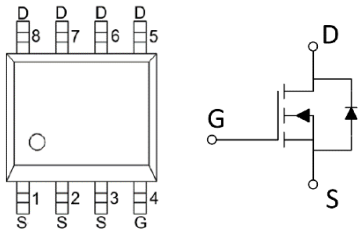




Applications

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

Ordering Information

Device	package	Device Marking	Package Qty.
LY4410	SOP-8	LY4410	3000/PCS

Absolute Maximum Ratings (T$_C$=25℃,unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V_{GS}=0V)	V_{DS}	30	V
Gate-Source Voltage (V_{GS}=0V,static)	V_{GS}	±20	V
Continuous Drain Current (T$_C$=25℃)	I_D	13	A
Continuous Drain Current (T$_C$=100℃)		9	A
Pulesd Drain Current	I_{DM}	60	A
Single Pulsed Avalanche Energy	E_{AS}	69	mJ
Maximum Power Dissipation (T$_C$=25℃)	P_D	6.4	W
Maximum Power Dissipation (T$_C$=100℃)		3.1	W
Operating,Storage Temperature Range	T_J,T_{STG}	-55~150	℃

Thermal Characteristics

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

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V	-	-	1	μA
Gate -Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS},I_D=250μA	0.8	1.1	1.4	V
Drain-Source On-stage Resistance	$R_{DS(ON)}$	V_{GS}=10V,I_D=1A	-	10	15	mΩ
		V_{GS}=4.5V,I_D=2A	-	14	20	
		V_{GS}=2.5V,I_D=5A	-	19	30	

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	V_{DS}=15V	-	1535	-	pF
Output capacitance	C_{oss}	V_{GS}=0V	-	160	-	
Reverse transfer capacitance	C_{rss}	f=1MHz	-	100	-	
Gate Resistance	R_g	f=1MHz	-	1.6	-	Ω
Total Gate Charge	Q_g	V_{DS}=15V	-	39	-	nC
Gate Source Charge	Q_{gs}	V_{GS}=10V	-	2.7	-	
Gate Drain Charge	Q_{gd}	I_D=20A	-	11	-	
Turn-on delay Time	$t_{d(on)}$	V_{GS}=10V	-	14	-	ns
Rise time	t_r	V_{DS}=15V	-	27	-	
Turn-off delay Time	$t_{d(off)}$	R_L=3.5Ω	-	65	-	
Fall time	t_f	R_G=6.8Ω	-	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	-	16	-	ns
Reverse Recovery Charge	Q_{rr}	d_i/d_t=100A/μs	-	21	-	nC

Electrical Characteristics Diagrames

Figure 1. On-Regin Characteristics

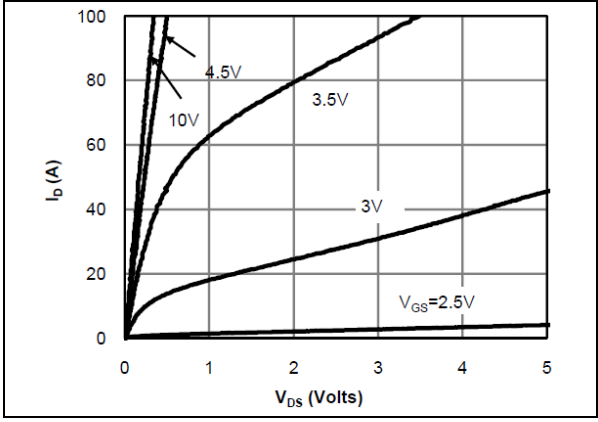


Figure 2. Transfer Characteristics

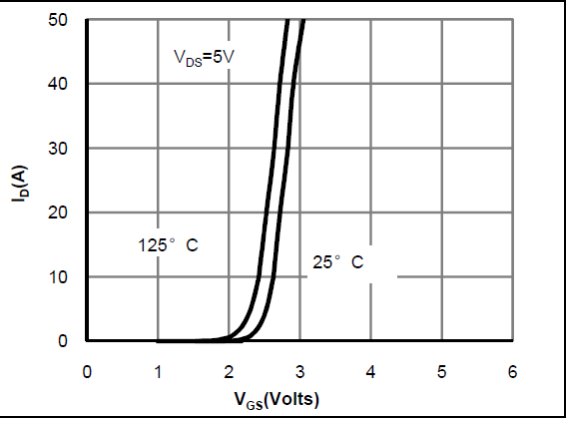


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

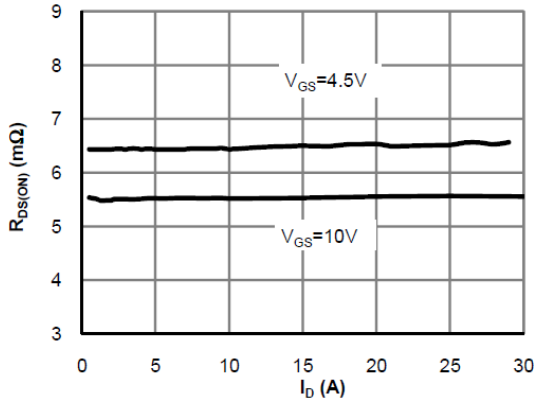


Figure 4. On-Resistance vs. Junction Temperature

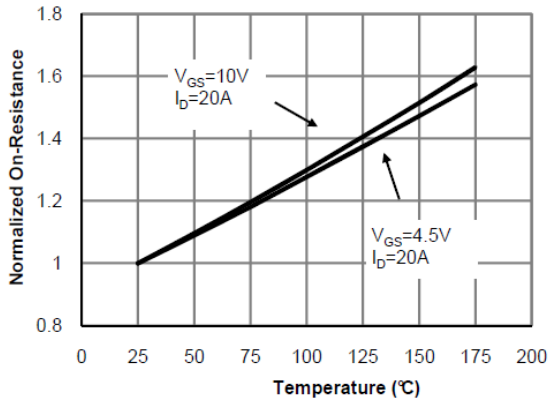


Figure 5. On-Resistance vs. Gate-Source Voltage

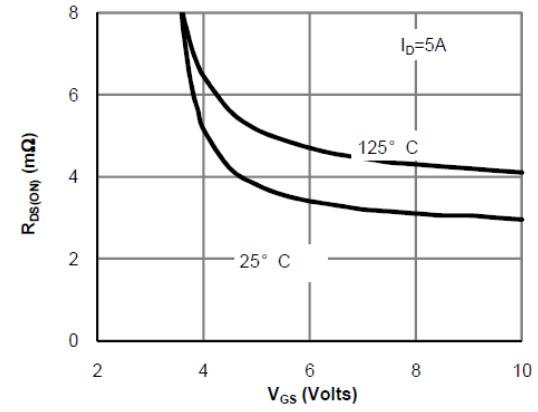


Figure 6. Body-Diode Characteristics

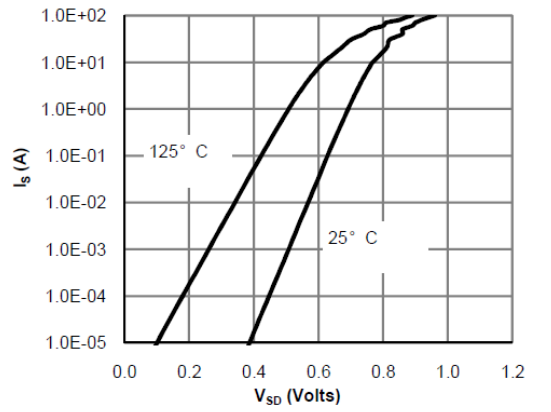


Figure 7. Gate-Charge Characteristics

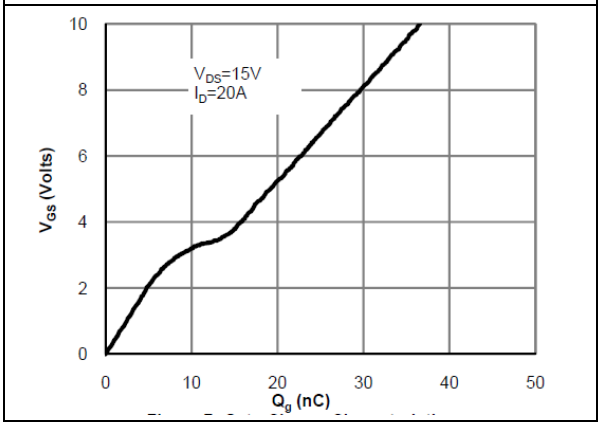


Figure 8. Capacitance Characteristics

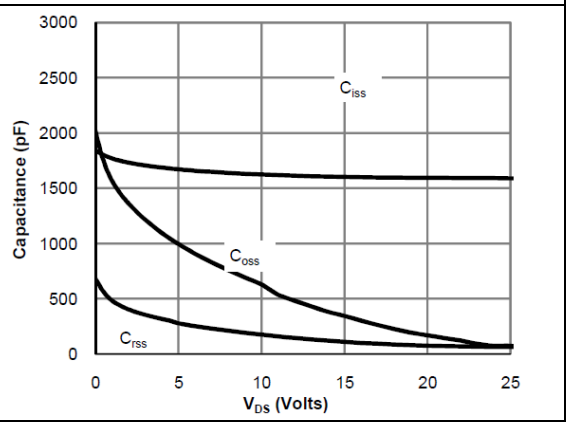


Figure 9. Maximum Forward Biased Safe Operating Area

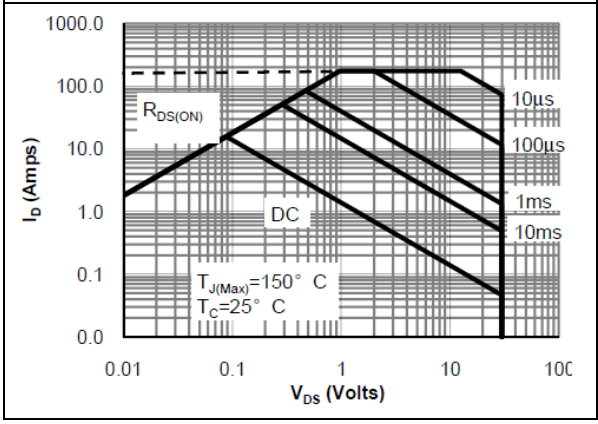


Figure 10. Single Pulse Power Rating Junction-to-Ambient

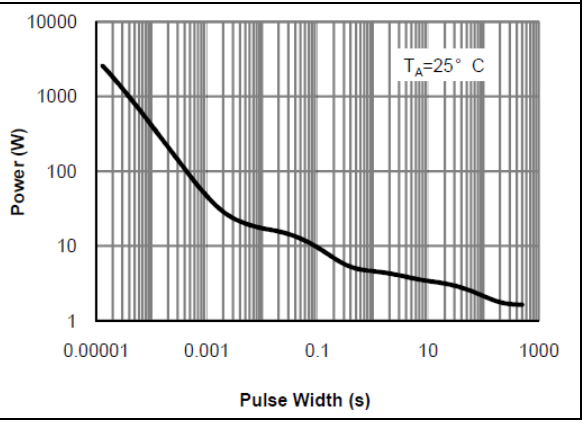
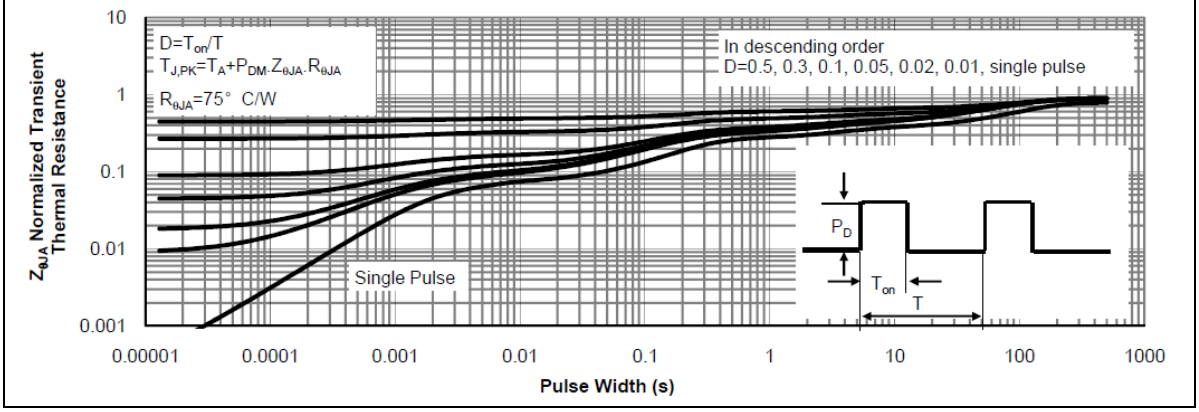


Figure 11. Normalized Maximum Transient Thermal Impedance



Physical Dimensions

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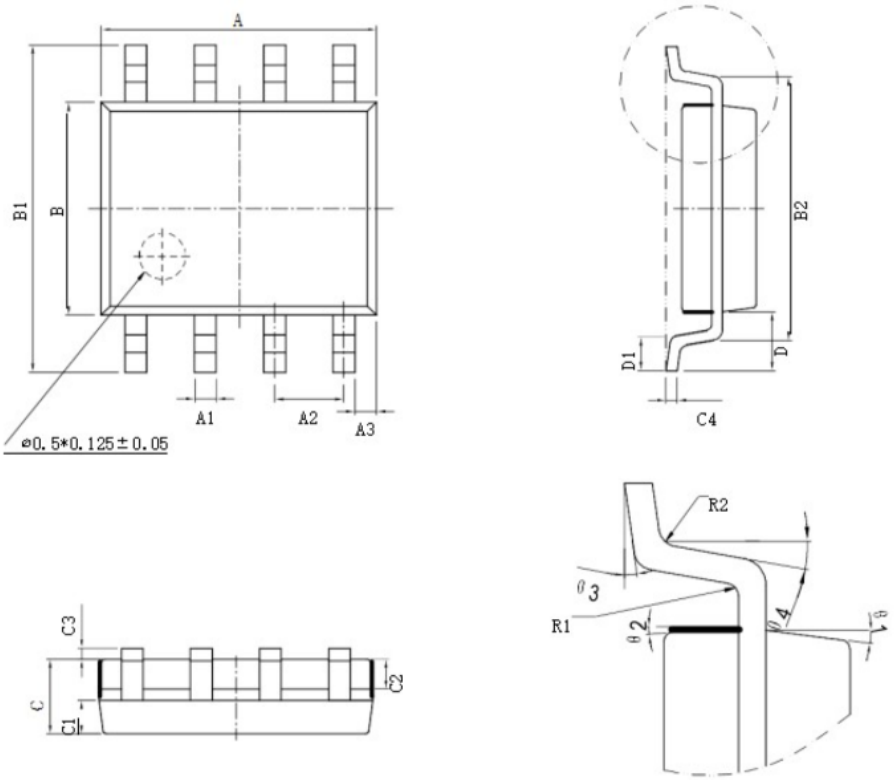

符号	尺寸（mm）		符号	尺寸（mm）	
	最小值	最大值		最小值	最大值
A	4.80	5.00	C3	0.05	0.20
A1	0.356	0.456	C4	0.203	0.233
A2	1.27 TYP		D	1.05 TYP	
A3	0.345 TYP		D1	0.40	0.80
B	3.80	4.00	R1	0.20 TYP	
B1	5.80	6.20	R2	0.20 TYP	
B2	5.00 TYP		θ1	17° TYP4	
C	1.30	1.60	θ2	13° TYP4	
C1	0.55	0.65	θ3	0° ~ 8°	
C2	0.55	0.65	θ4	4° ~ 12°	