

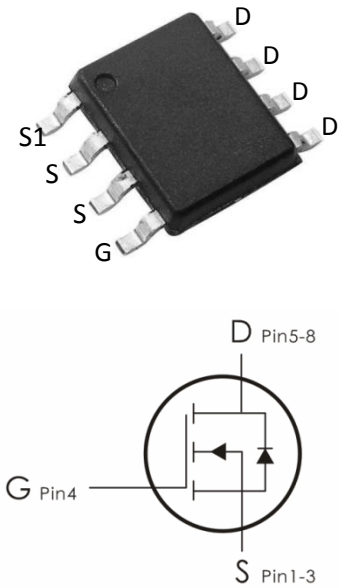
Description:

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=60V, I_D=6A, R_{DS(ON)} < 36m\Omega @ V_{GS}=10V$ (typ: $27m\Omega$)
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
DO4440	4440	SOP-8	3000 pcs/Reel

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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current -Continuous ¹ ($T_A=25^\circ\text{C}$)	6	A
	Drain Current -Continuous ¹ ($T_A=70^\circ\text{C}$)	4.5	
I_{DM}	Drain Current – Pulsed ²	18	
E_{AS}	Single Pulse Avalanche Energy ³	22	mJ
I_{AS}	Avalanche Current	21	A
P_D	Power Dissipation ⁴ ($T_A=25^\circ\text{C}$)	1.5	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case ¹	25	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ¹	85	

Electrical Characteristics: ($T_c=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	60	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =48V , V _{GS} =0V, T _J =25℃	---	---	1	uA
		V _{DS} =48V , V _{GS} =0V, T _J =55℃	---	---	5	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0V	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	1	---	2.5	V
R _{DS(ON)}	Static Drain-Source On Resistance ²	V _{GS} =10V, I _D =4A	---	27	36	m Ω
		V _{GS} =4.5V, I _D =3A	---	35	46	m Ω
G _{FS}	Forward Transconductance	V _{DS} =5V, I _D =4A	---	28.3	---	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	1000	---	pF
C _{oss}	Output Capacitance		---	60	---	
C _{rss}	Reverse Transfer Capacitance		---	45	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =30V, I _D =4A R _G =3.3 Ω , V _{GS} =10V	---	3	---	ns
t _r	Rise Time		---	34	---	ns
t _{d(off)}	Turn-Off Delay Time		---	23	---	ns
t _f	Fall Time		---	6	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =48V, I _D =4A	---	19	---	nC
Q _{gs}	Gate-Source Charge		---	2.6	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	4.1	---	nC
R _G	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	2.5	---	Ω
Drain-Source Diode Characteristics						
V _{SD}	Source-Drain Diode Forward Voltage ²	V _{GS} =0V, I _S =1A, T _J =25℃	---	---	1.2	V
I _S	Continuous Source Current ^{1,5}	V _G =V _D =0V , Force Current	---	---	4.5	A
I _{SM}	Pulsed Source Current ^{2,5}		---	---	18	A
T _{rr}	Body Diode Reverse Recovery Time	I _F =4A , di/dt=100A/μs , T _J =25℃	---	12.1	---	Ns
Q _{rr}	Body Diode Reverse Recovery Charge		---	6.7	---	Nc

Notes:

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3.The EAS data shows Max. rating . The test condition is $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=21A$
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics: ($T_C=25^\circ C$ unless otherwise noted)

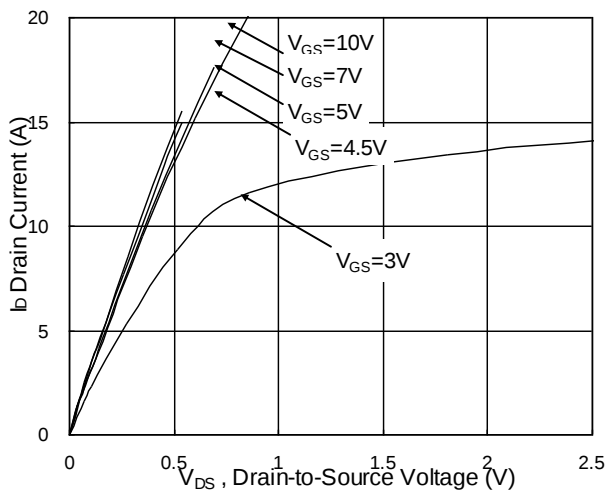


Fig.1 Typical Output Characteristics

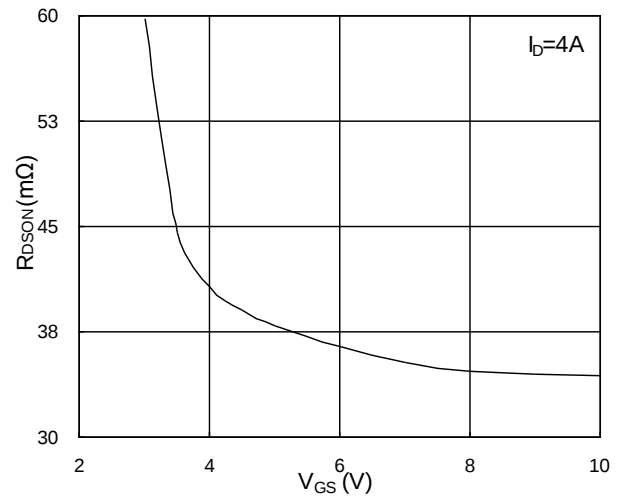


Fig.2 On-Resistance vs. Gate-Source

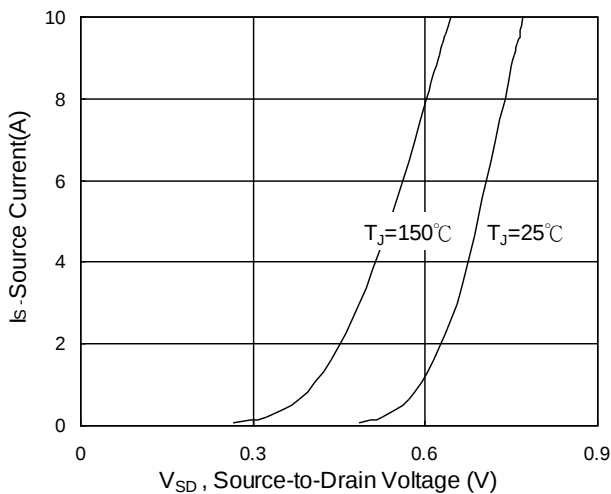


Fig.3 Forward Characteristics Of Reverse

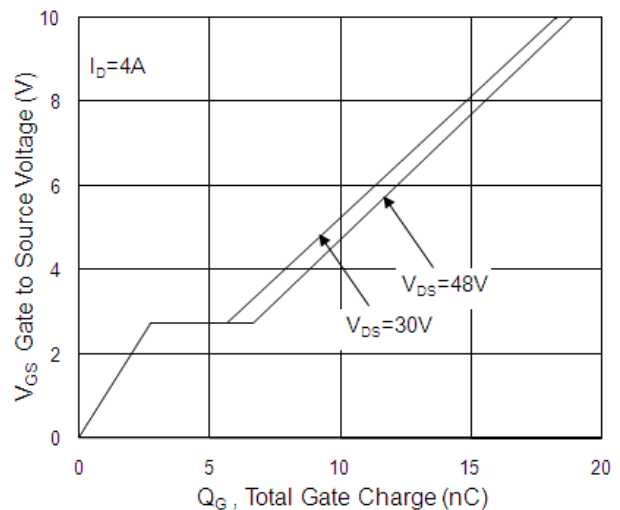


Fig.4 Gate-Charge Characteristics

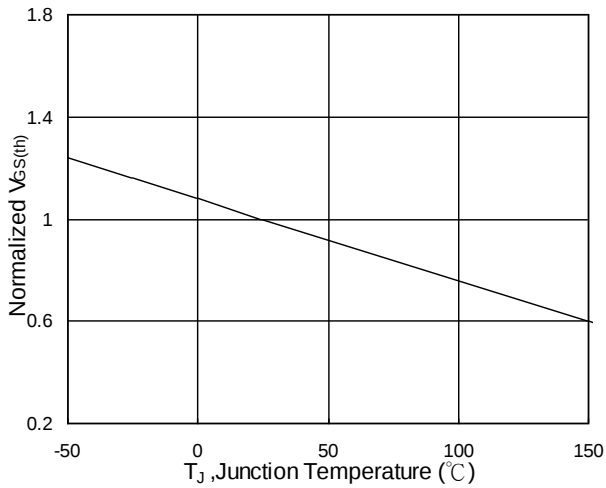


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

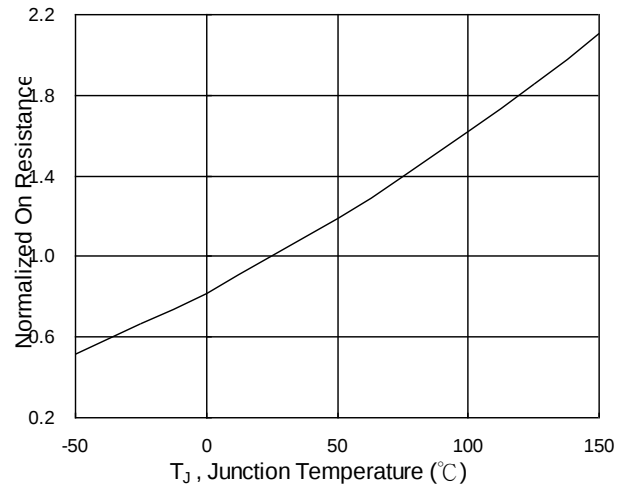


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

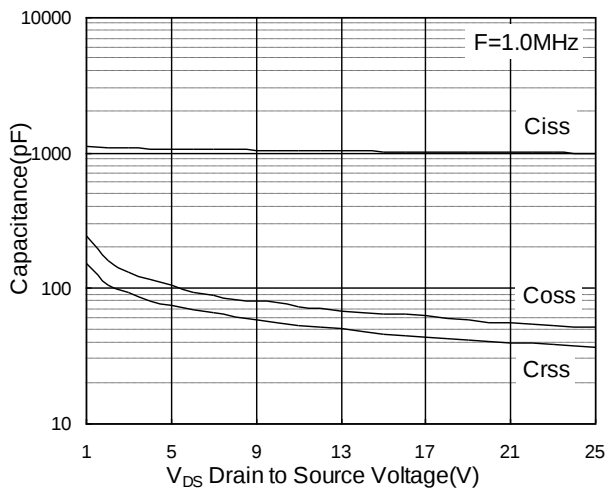


Fig.7 Capacitance

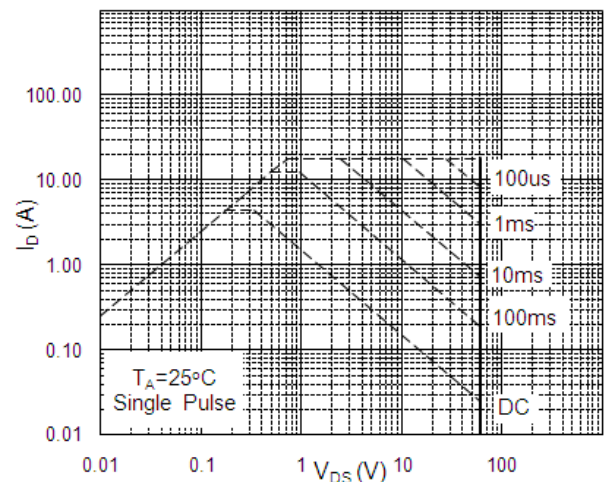


Fig.8 Safe Operating Area

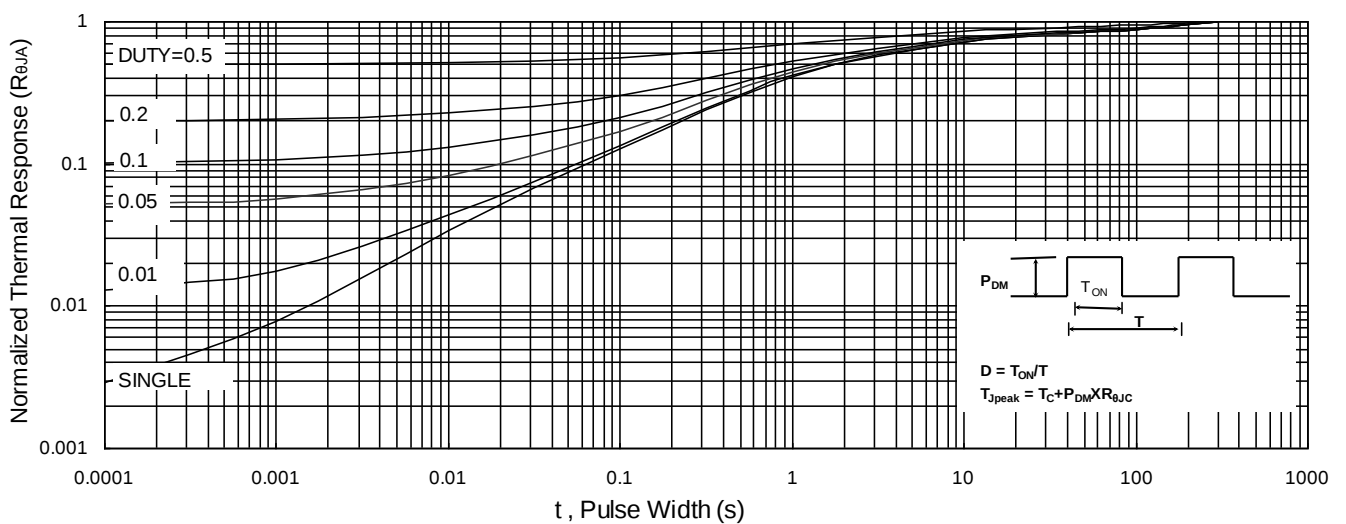
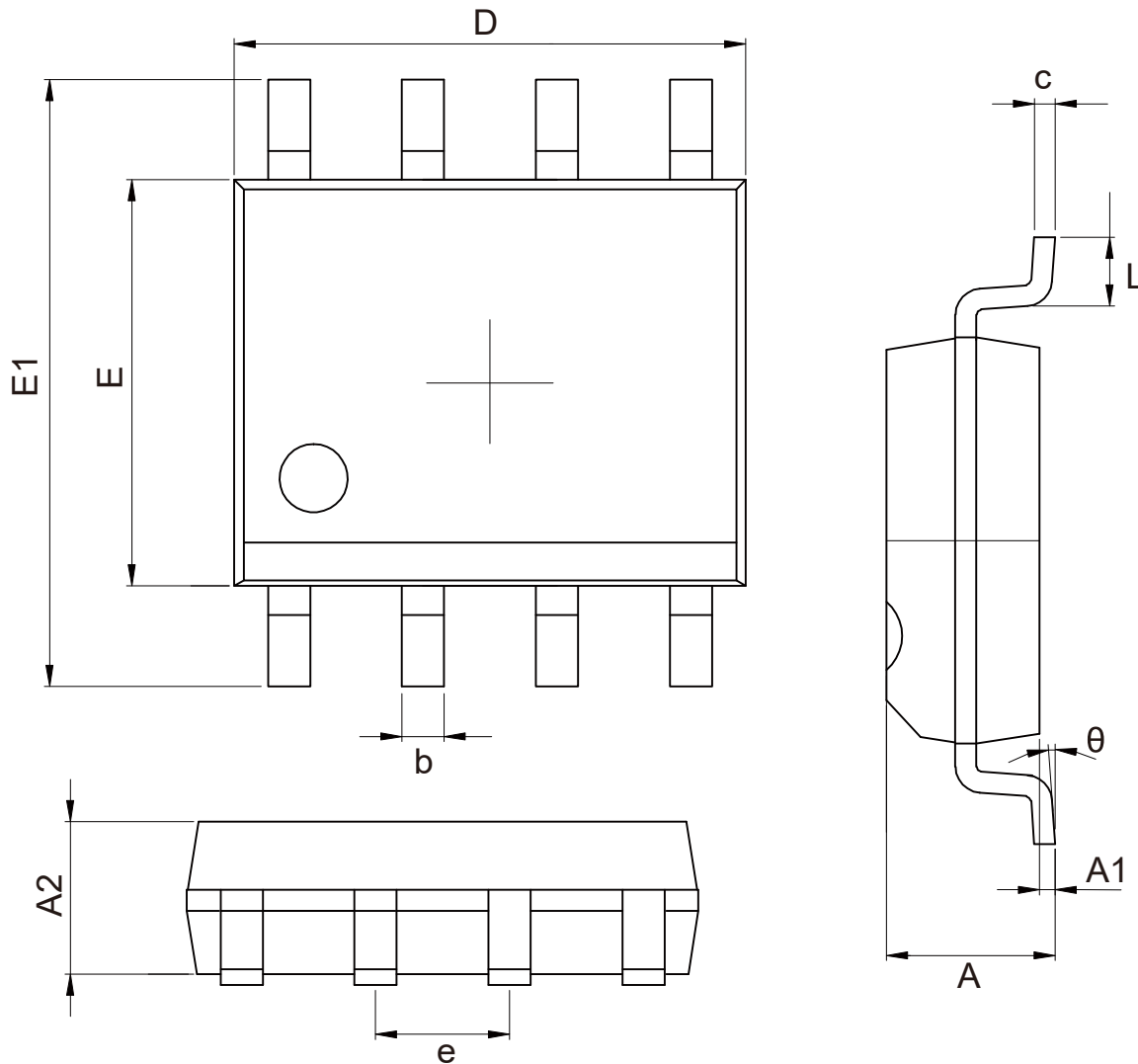


Fig.9 Normalized Maximum Transient Thermal Impedance

SOP-8 Package Information:



COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER			
SYMBOL	MIN	NOM	MAX
A	1.350	—	1.750
A1	0.100	—	0.250
A2	1.350	—	1.550
b	0.330	—	0.510
c	0.170	—	0.250
D	4.700	—	5.100
E	3.800	3.900	4.000
E1	5.800	—	6.200
e	1.270BSC		
L	0.400	—	1.270
θ	0°	—	8°

Unit:mm

Marking Information:

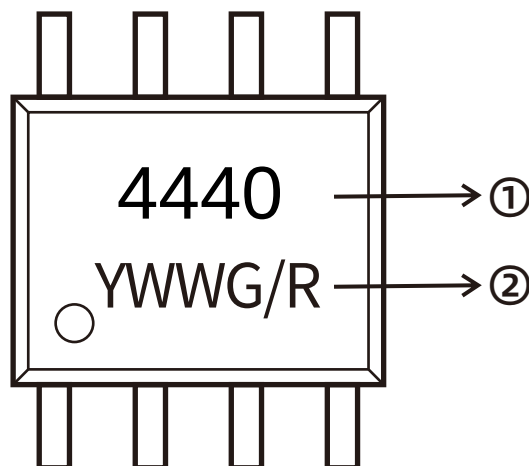
①. Part NO.

②. Date Code(YWWG / R)

Y : Year Code , last digit of the year

WW : Week Code(01-53)

G/R : G(Green) /R(Lead Free)



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