

KY4407

-30V P-Channel Mosfet

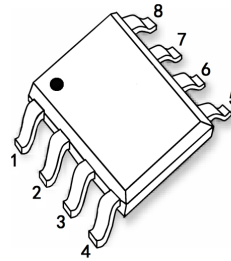
FEATURES

- $R_{DS(ON)} \leq 14m\Omega$ (10m Ω Typ.)
@ $V_{GS}=-10V$
- $R_{DS(ON)} \leq 20m\Omega$ (14m Ω Typ.)
@ $V_{GS}=-4.5V$

APPLICATIONS

- PWM Applications
- Load Switch

SOP-8

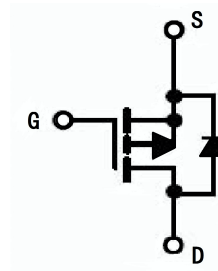


1: S 3: S 5: D 7: D
2: S 4: G 6: D 8: D

MARKING



P-CHANNEL MOSFET



Absolute Maximum Ratings ($T_a=25^\circ\text{C}$ unless otherwise specified)

Symbol	Param	Max.	Units
V_{DSS}	Drain-Source Voltage	-30	V
V_{GSS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	$T_a = 25^\circ\text{C}$	-12
		$T_a = 100^\circ\text{C}$	-8
I_{DM}	Pulsed Drain Current <small>note1</small>	-60	A
P_D	Power Dissipation	$T_a = 25^\circ\text{C}$	3.1
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	40	$^\circ\text{C}/\text{W}$
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

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Electrical Characteristics ($T_a=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Param	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D = -250\mu A$	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = -30V, V_{GS} = 0V,$	-	-	-1	μA
I_{GSS}	Gate to Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.0	-1.6	-3.0	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note2</small>	$V_{GS} = -10V, I_D = -12A$	-	10	14	m Ω
		$V_{GS} = -4.5V, I_D = -10A$	-	14	20	
g_{FS}	Forward Transconductance	$V_{GS} = -5V, I_D = -12A$	-	24	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS} = -15V, V_{GS} = 0V,$ $f = 1.0MHz$	-	2000	-	pF
C_{oss}	Output Capacitance		-	370	-	pF
C_{riss}	Reverse Transfer Capacitance		-	295	-	pF
Q_g	Total Gate Charge	$V_{DS} = -15V, I_D = -12A,$ $V_{GS} = -10V$	-	30	-	nC
Q_{gs}	Gate-Source Charge		-	4.6	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	10	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD} = -15V, R_L = 2.2\Omega,$ $V_{GS} = -10V, R_{GEN} = 3\Omega$	-	11	-	ns
t_r	Turn-on Rise Time		-	9.4	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	24	-	ns
t_f	Turn-off Fall Time		-	12	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-12	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-60	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS} = 0V, I_S = -1.0A$	-	-0.75	-1.0	V

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$

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Typical Characteristics

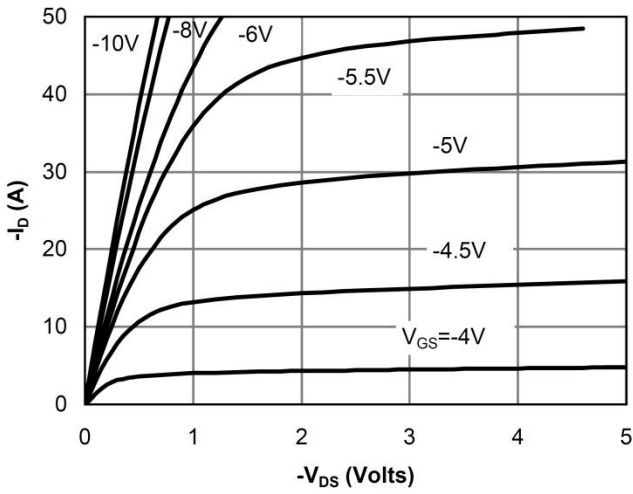


Fig 1: On-Region Characteristics

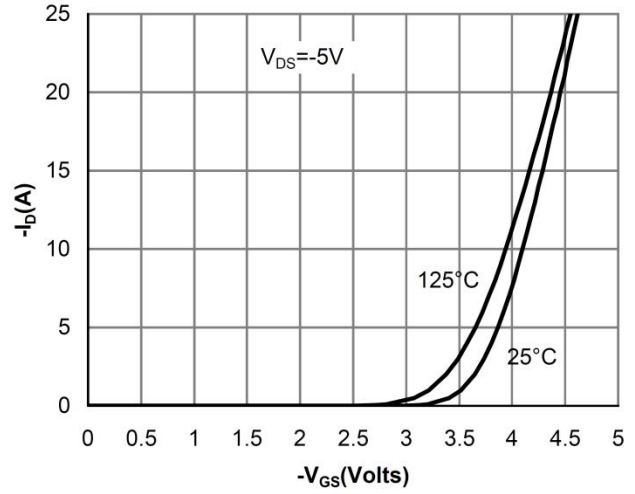


Figure 2: Transfer Characteristics

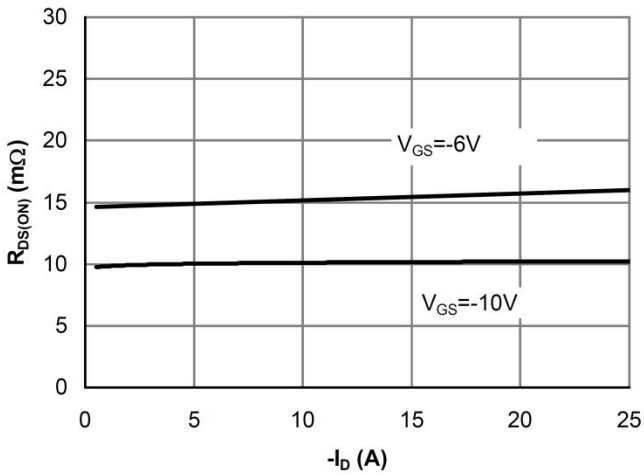


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

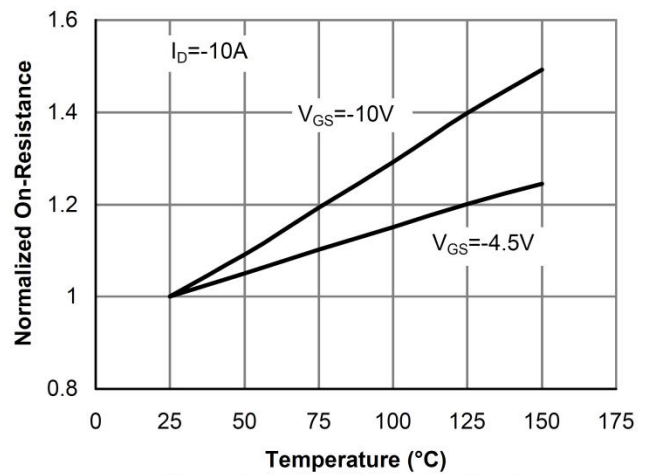


Figure 4: On-Resistance vs. Junction Temperature

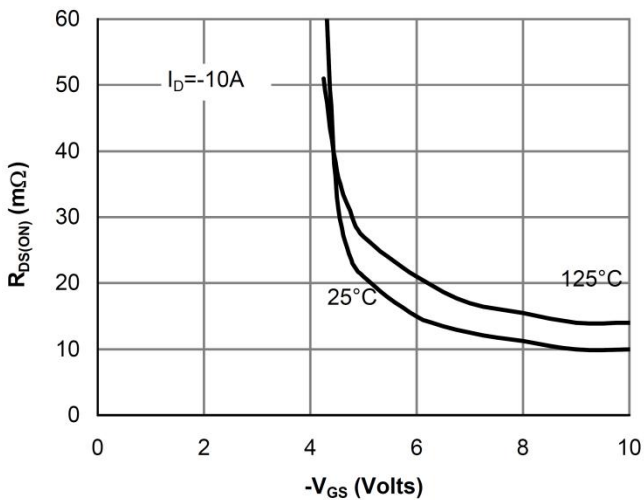


Figure 5: On-Resistance vs. Gate-Source Voltage

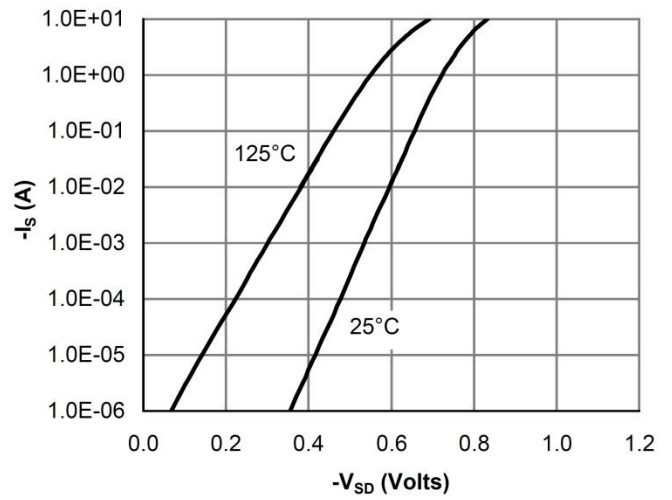


Figure 6: Body-Diode Characteristics

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Typical Characteristics (cont.)

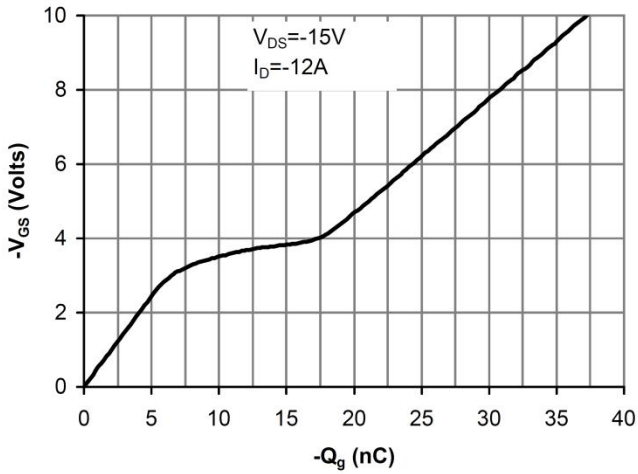


Figure 7: Gate-Charge Characteristics

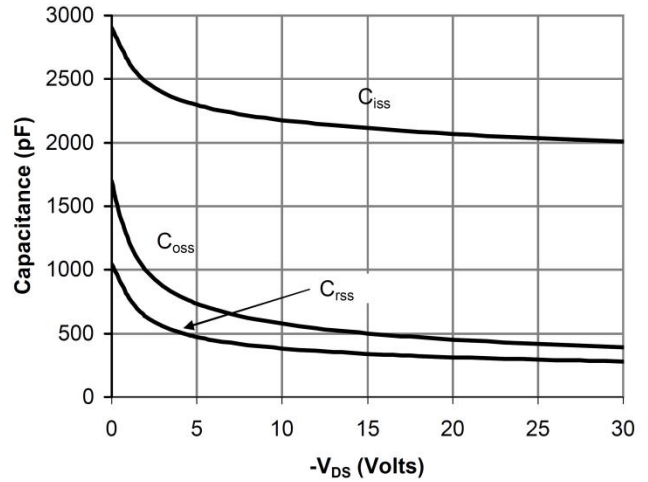


Figure 8: Capacitance Characteristics

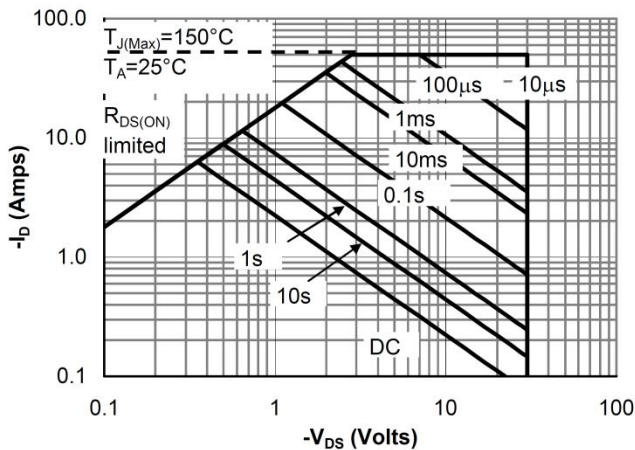


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

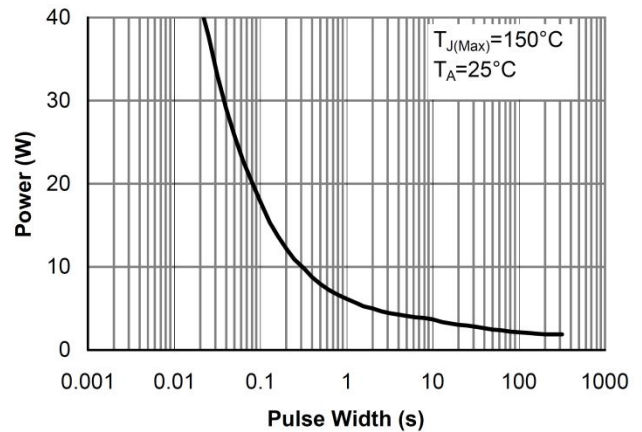


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

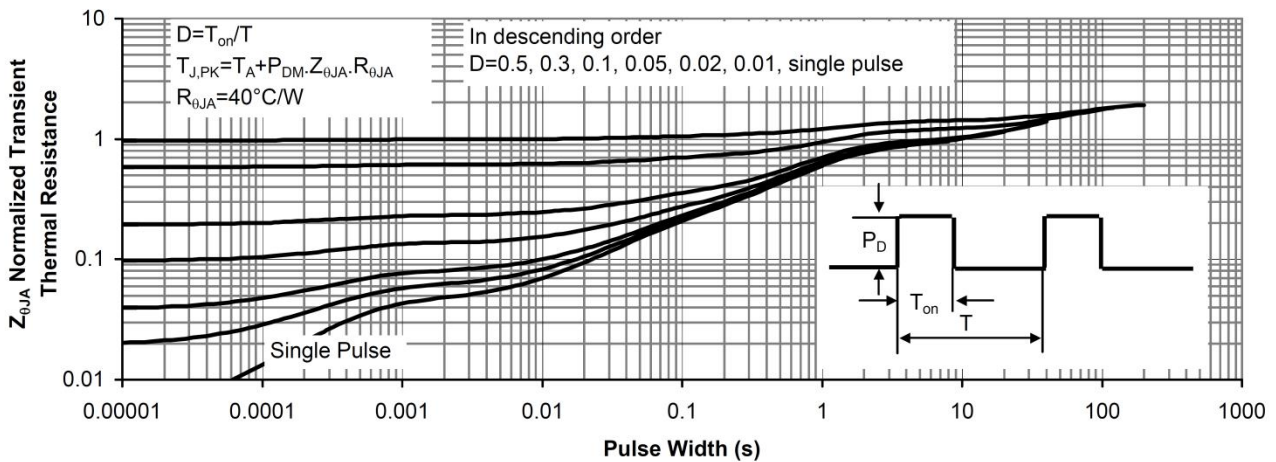
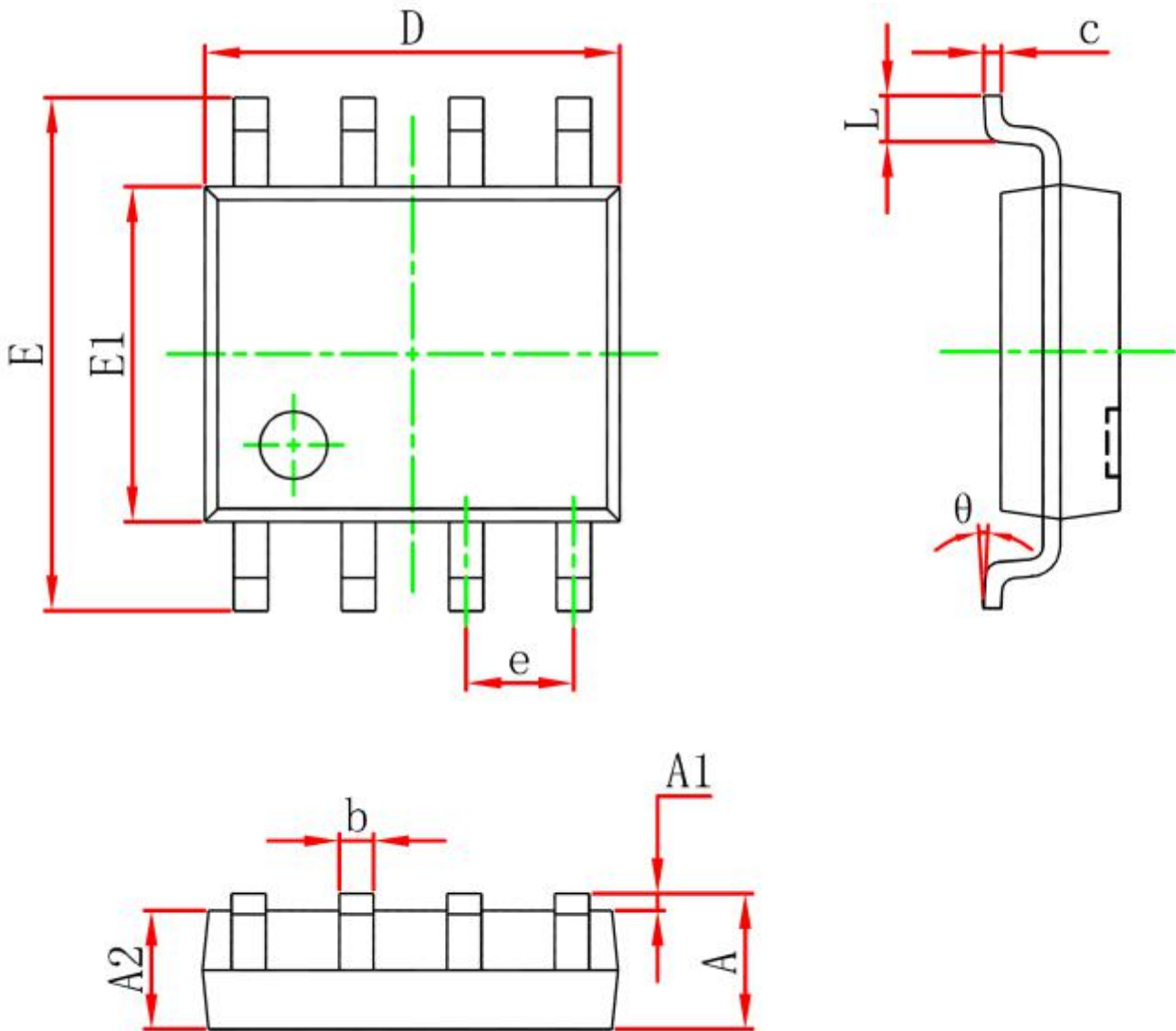


Figure 11: Normalized Maximum Transient Thermal Impedance

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SOP-8 Package Information



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.35	1.75
A1	0.10	0.25
A2	1.35	1.55
b	0.33	0.51
c	0.17	0.25
D	4.80	5.00
e	1.27 REF.	
E	5.80	6.20
E1	3.80	4.00
L	0.40	1.27
θ	0°	8°