◀◀KY® ShenZhen HanKingYuan Electronic Co.,Ltd

KY4407

-30V P-Channel Mosfet
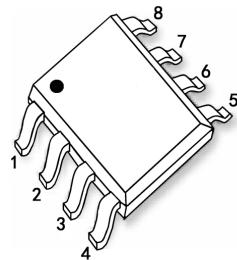
FEATURES

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

APPLICATIONS
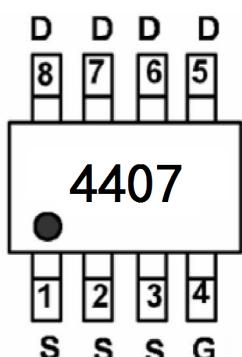
- PWM Applications
- Load Switch

MARKING

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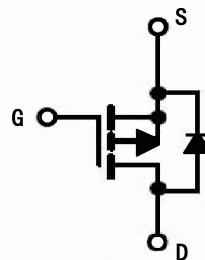
| 1: S | 3: S | 5: D | 7: D |
| 2: S | 4: G | 6: D | 8: D |

P-CHANNEL MOSFET

Absolute Maximum Ratings (T_a=25℃ 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℃	-12	A
		T_a = 100℃	-8	A
I_{DM}	Pulsed Drain Current [note1]		-60	A
P_D	Power Dissipation	T_a= 25℃	3.1	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient		40	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

Electrical Characteristics (T$_a$=25℃ unless otherwise specified)

Symbol	Param	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V$_{(BR)DSS}$	Drain-Source Breakdown Voltage	V$_{GS}$=0V,I$_D$= -250µA	-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$_{GS}$ = ±20V	-	-	±100	nA
On Characteristics						
V$_{GS(th)}$	Gate Threshold Voltage	V$_{DS}$= V$_{GS}$, I$_D$= -250µA	-1.0	-1.6	-3.0	V
R$_{DS(on)}$	Static Drain-Source on-Resistance [note2]	V$_{GS}$ =-10V, I$_D$ =-12A	-	10	14	mΩ
		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$_{rss}$	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$_L$=2.2Ω, V$_{GS}$=-10V, R$_{GEN}$=3Ω	-	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≤300µs, Duty Cycle≤0.5%

Typical Characteristics
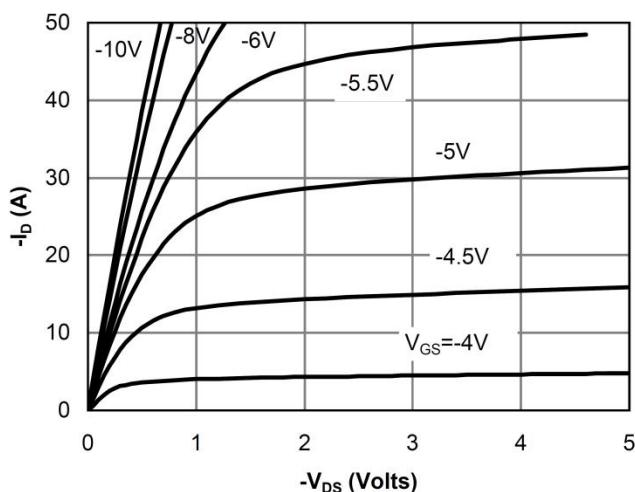
Fig 1: On-Region Characteristics
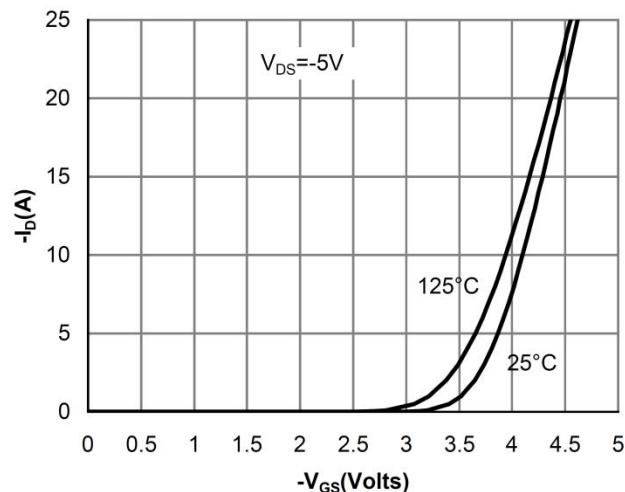
Figure 2: Transfer Characteristics
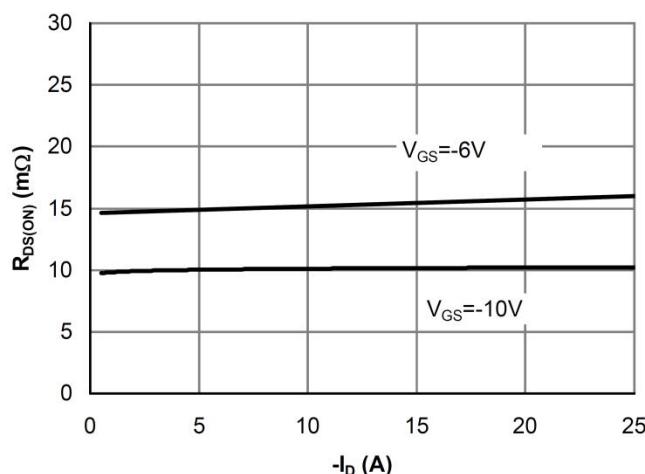
Figure 3: On-Resistance vs. Drain Current and Gate Voltage
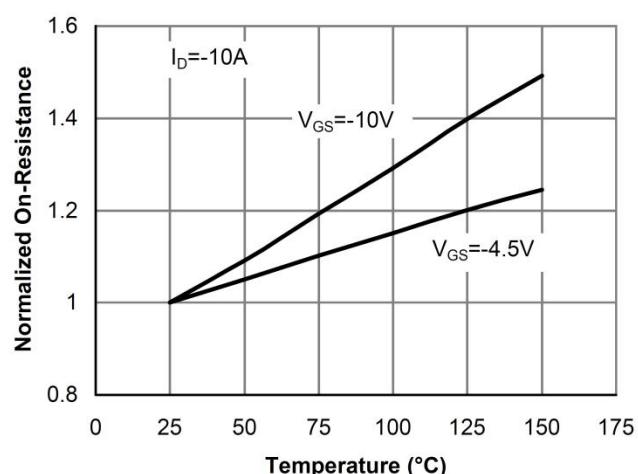
Figure 4: On-Resistance vs. Junction Temperature
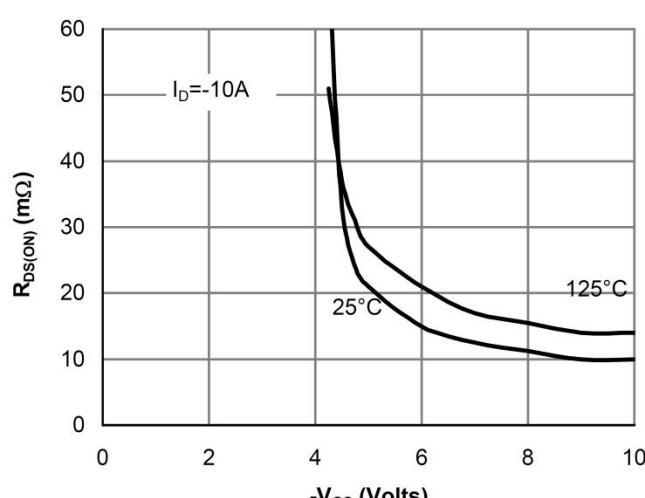
Figure 5: On-Resistance vs. Gate-Source Voltage
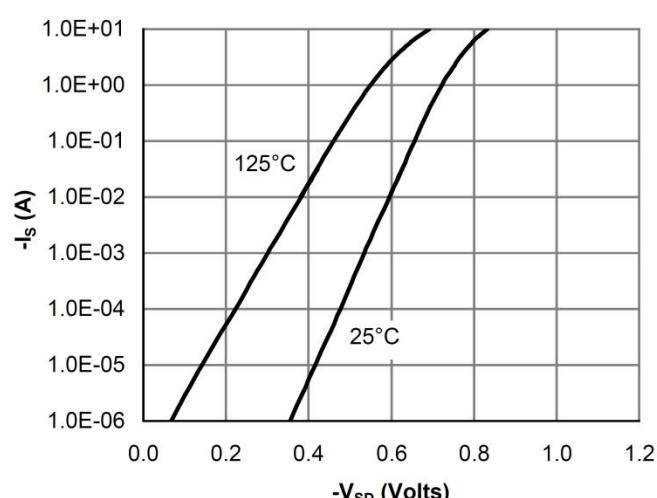
Figure 6: Body-Diode Characteristics

Typical Characteristics (cont.)

$V_{DS}=-15V$
$I_D=-12A$
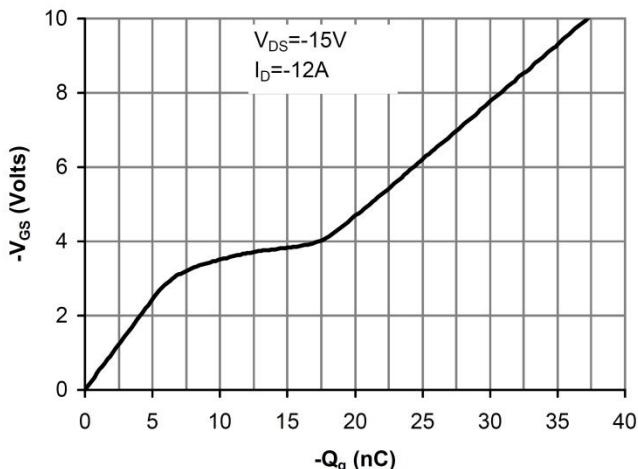
Figure 7: Gate-Charge Characteristics
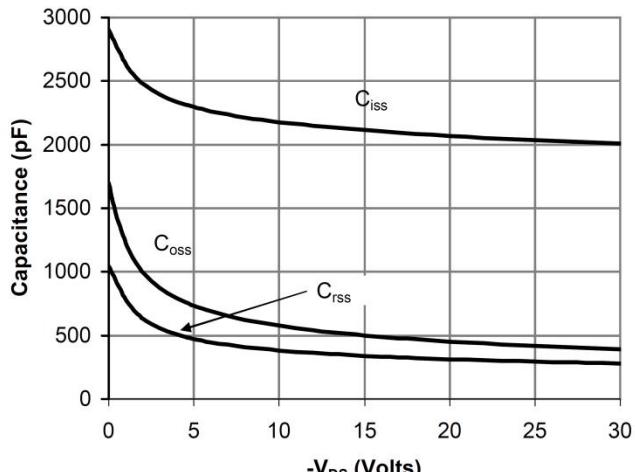
Figure 8: Capacitance Characteristics

$T_{J(Max)}=150°C$
$T_A=25°C$

$R_{DS(ON)}$ limited
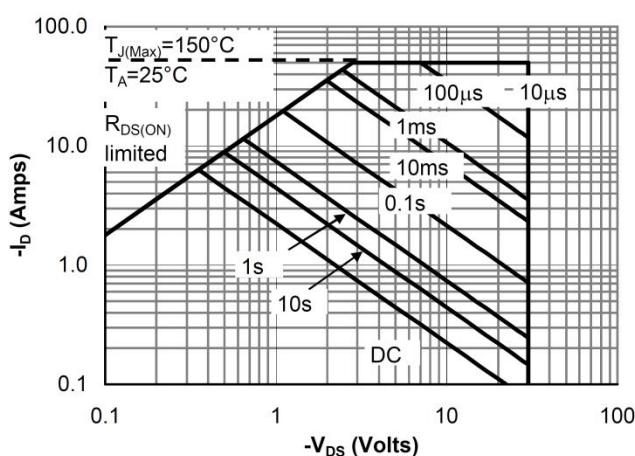
Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

$T_{J(Max)}=150°C$
$T_A=25°C$
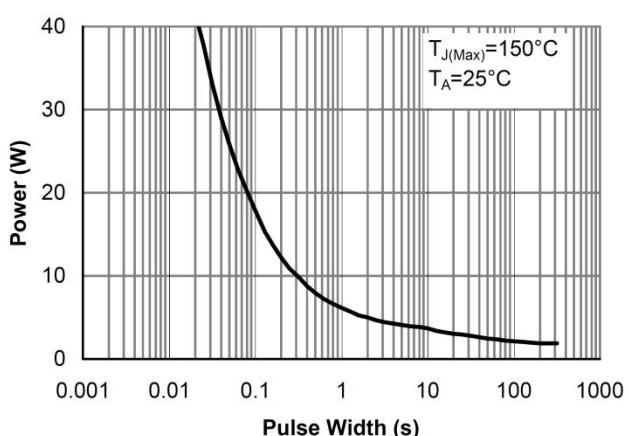
Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

$D=T_{on}/T$
$T_{J,PK}=T_A+P_{DM}.Z_{\theta JA}.R_{\theta JA}$
$R_{\theta JA}=40°C/W$

In descending order
D=0.5, 0.3, 0.1, 0.05, 0.02, 0.01, single pulse

Single Pulse
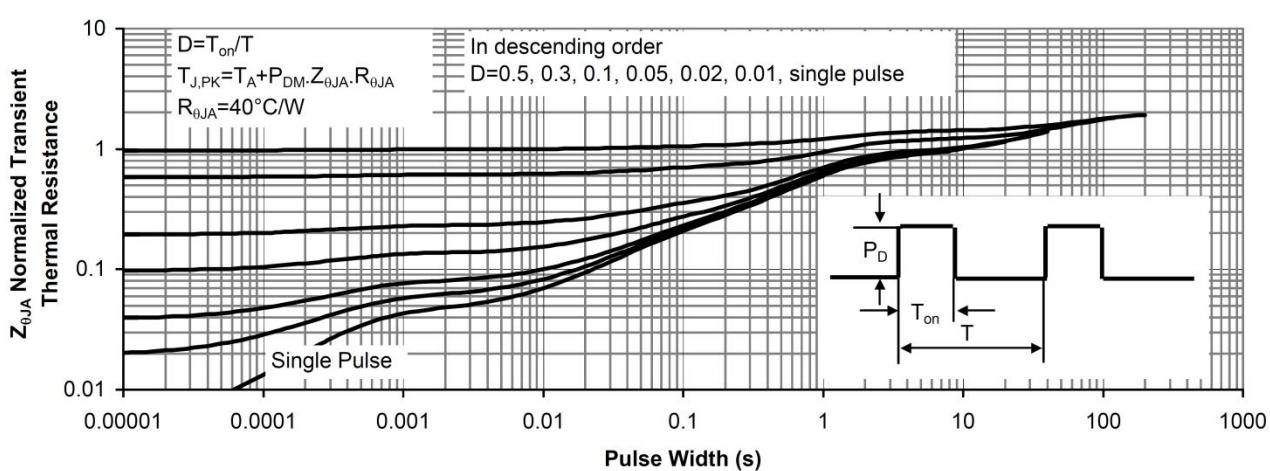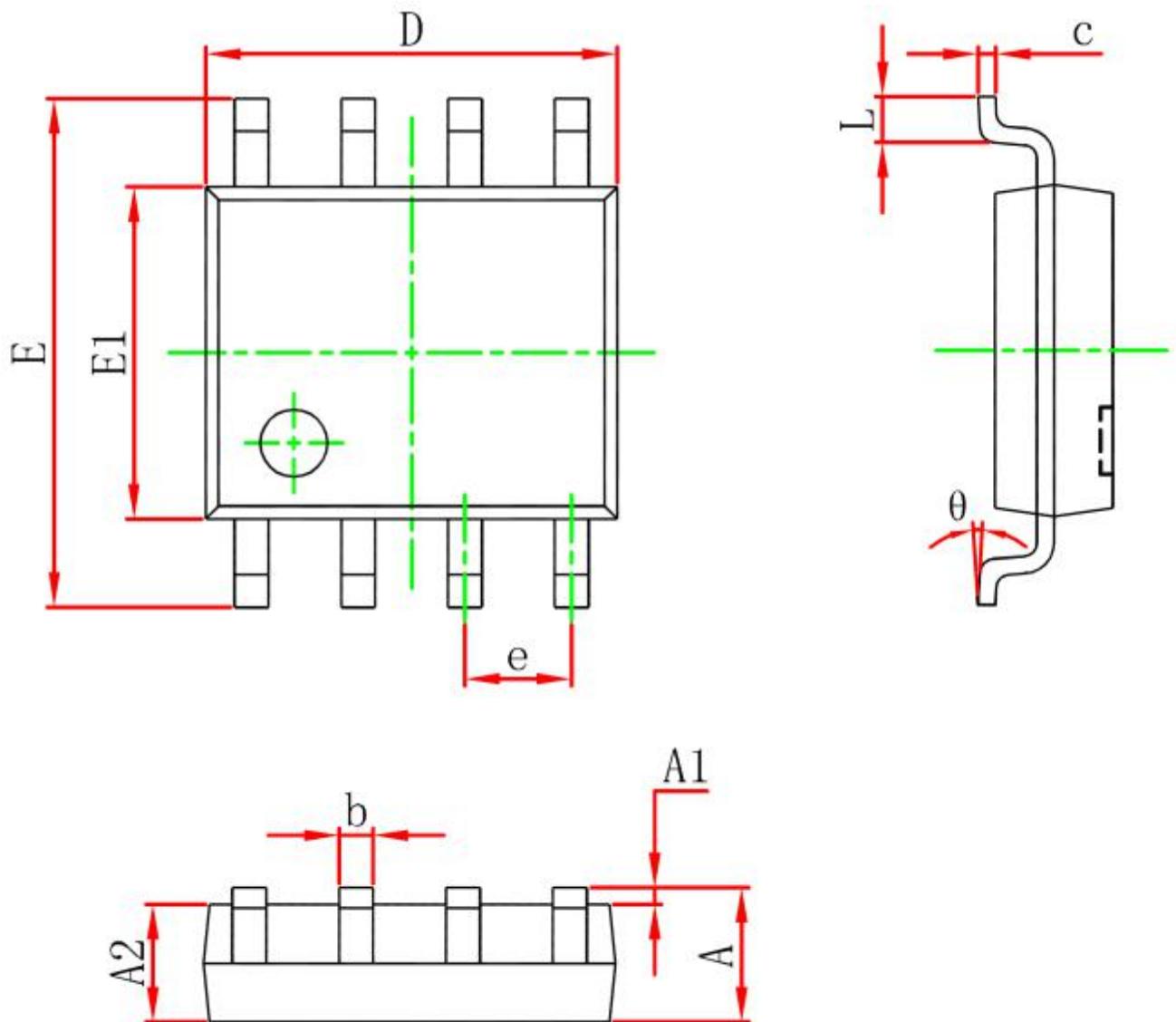
Figure 11: Normalized Maximum Transient Thermal Impedance

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°

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