

# KY3407

-30V P-Channel Mosfet

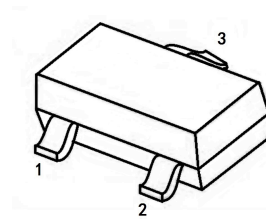
## FEATURES

- $R_{DS(ON)} \leq 60m\Omega$  ( 48m $\Omega$  Typ.)  
@ $V_{GS}=-10V$
- $R_{DS(ON)} \leq 85m\Omega$  ( 62m $\Omega$  Typ.)  
@ $V_{GS}=-4.5V$

## APPLICATIONS

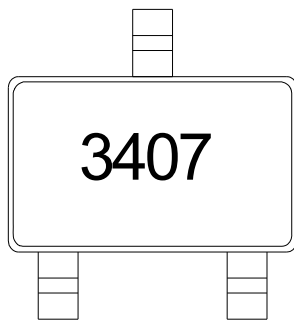
- Load Switch
- Power Management

## SOT-23



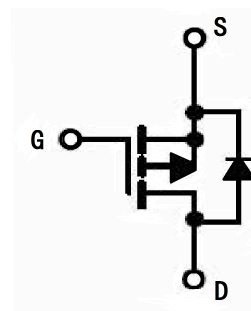
1. GATE
2. SOURCE
3. DRAIN

## MARKING



3407: Device code

## P-CHANNEL MOSFET



## MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

Symbol	Parameter	Max.	Units
$V_{DSS}$	Drain-Source Voltage	-30	V
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current	-4.1	A
$I_{DM}$	Pulsed Drain Current <sup>note1</sup>	-16.4	A
$P_{tot}$	Total Power Dissipation	1.67	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	75	$^{\circ}C/W$
$T_J$	Junction Temperature	150	$^{\circ}C$
$T_{STG}$	Storage Temperature Range	-55 to +150	$^{\circ}C$

**MOSFET ELECTRICAL CHARACTERISTICS Ta=25 °C unless otherwise specified**

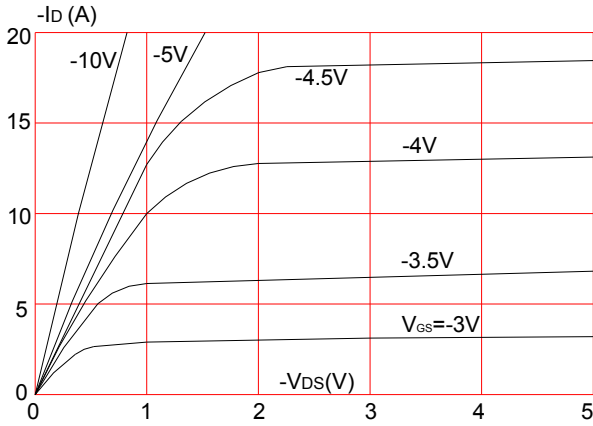
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = -250\mu A$	-30	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = -30V,$ $V_{GS} = 0V, T_J = 25^\circ C$	-	-	-1	$\mu A$
$I_{GSS}$	Gate to Body Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.0	-1.4	-2.5	V
$R_{DS(on)}$	Static Drain-Source On-Resistance <small>note2</small>	$V_{GS} = -10V, I_D = -4.1A$	-	48	60	m $\Omega$
		$V_{GS} = -4.5V, I_D = -3.5A$	-	62	85	
$g_{FS}$	Forward Transconductance	$V_{DS} = -5V, I_D = -4.1A$	5	-	-	S
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS} = -15V, V_{GS} = 0V$ $f = 1.0MHz$	-	580	-	pF
$C_{oss}$	Output Capacitance		-	98	-	pF
$C_{rss}$	Reverse Transfer Capacitance		-	74	-	pF
$Q_g$	Total Gate Charge	$V_{DS} = -15V, I_D = -4.1A,$ $V_{GS} = -10V$	-	6.8	-	nC
$Q_{gs}$	Gate-Source Charge		-	1.0	-	nC
$Q_{gd}$	Gate-Drain("Miller") Charge		-	1.4	-	nC
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-On Delay Time	$V_{GS} = -10V, V_{DS} = -15V$ $R_G = 2.5\Omega, I_D = -1A$ $R_L = 15\Omega,$	-	14	-	ns
$t_r$	Turn-On Rise Time		-	61	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	19	-	ns
$t_f$	Turn-Off Fall Time		-	10	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
$I_S$	Maximum Continuous Drain to Source Diode Forward Current		-	-	-4.1	A
$I_{SM}$	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-16.4	A
$V_{SD}$	Drain to Source Diode Forward Voltage	$V_{GS} = 0V, I_{SD} = -4.1A$ $T_J = 25^\circ C$	-	-0.89	-1.2	V

Notes: 1. Repetitive Rating: Pulse width limited by maximum junction temperature

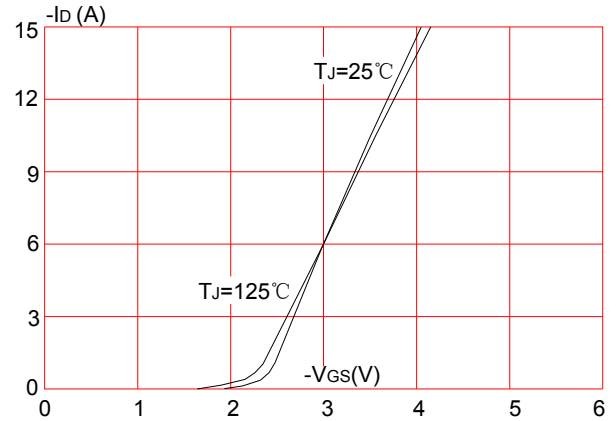
 2. Pulse Test: Pulse width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$

## TYPICAL PERFORMANCE CHARACTERISTICS

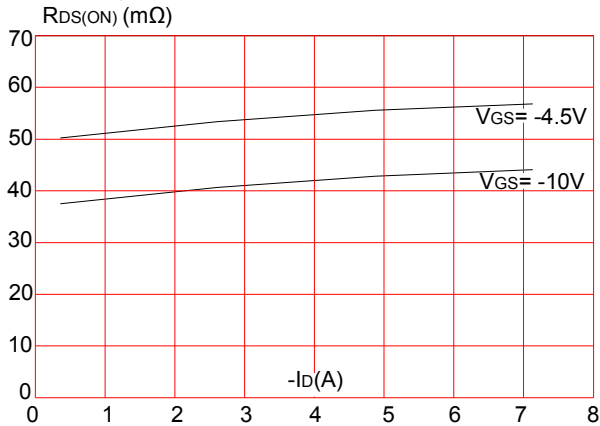
**Figure 1: Output Characteristics**



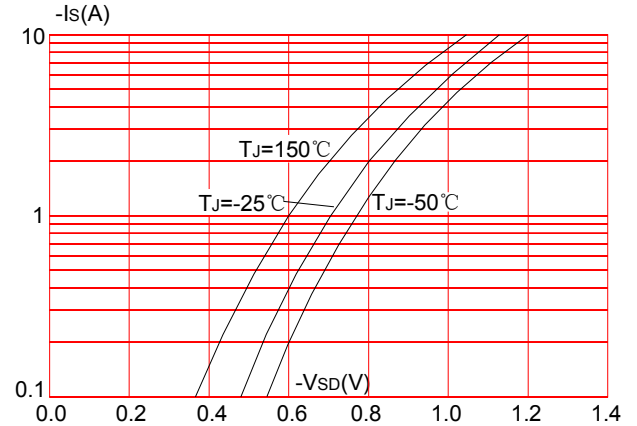
**Figure 2: Typical Transfer Characteristics**



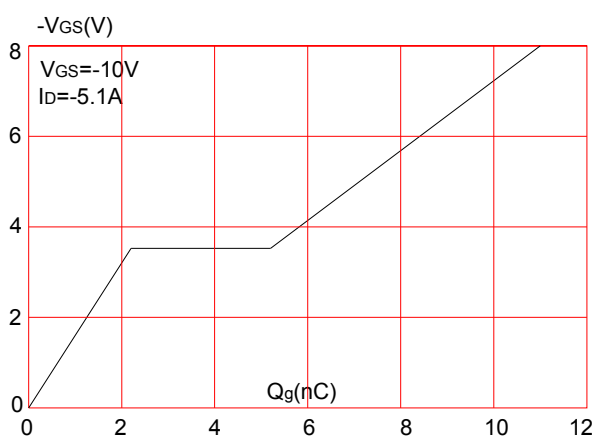
**Figure 3: On-resistance vs. Drain Current**



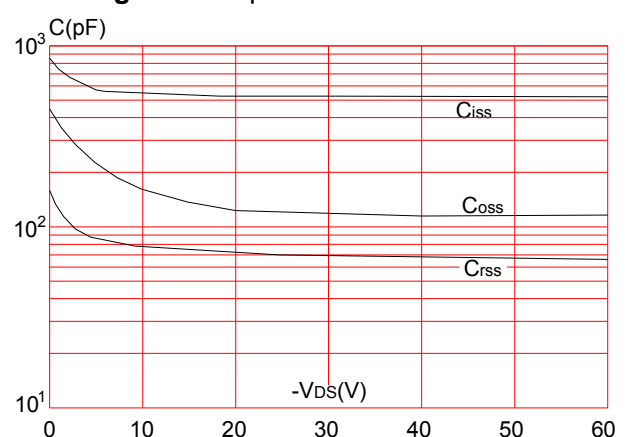
**Figure 4: Body Diode Characteristics**



**Figure 5: Gate Charge Characteristics**

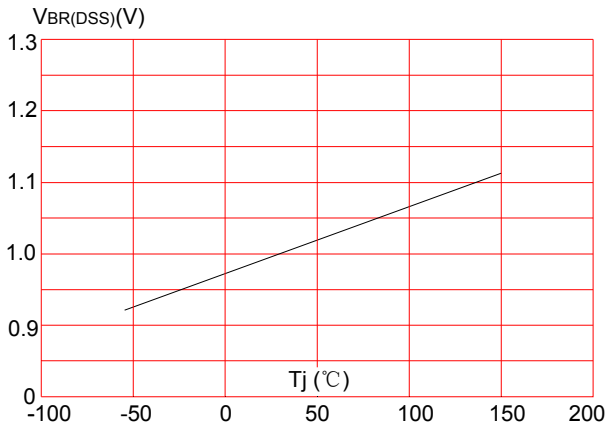


**Figure 6: Capacitance Characteristics**

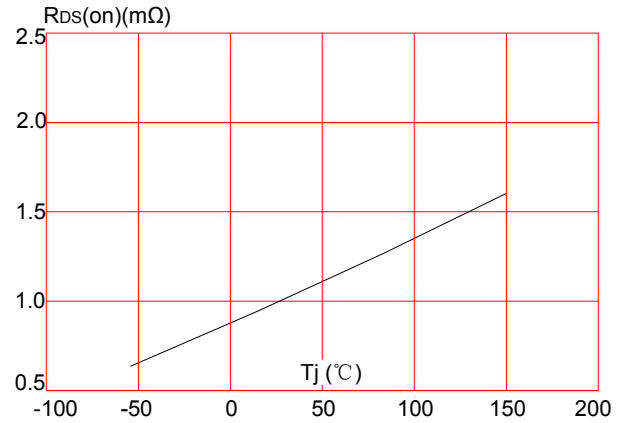


**TYPICAL PERFORMANCE CHARACTERISTICS (cont.)**

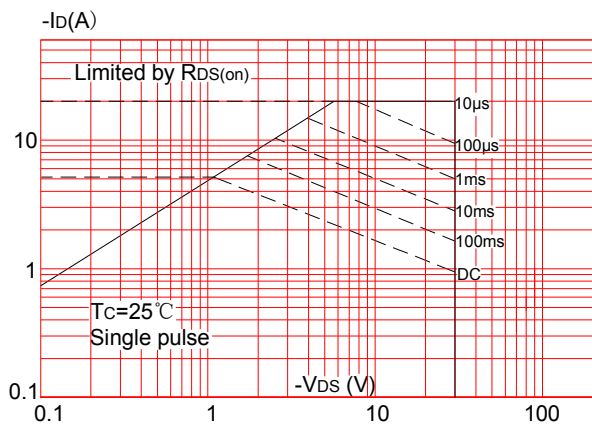
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



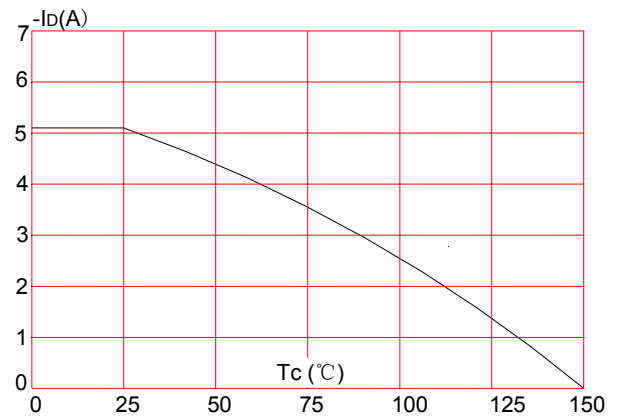
**Figure 8:** Normalized on Resistance vs. Junction Temperature



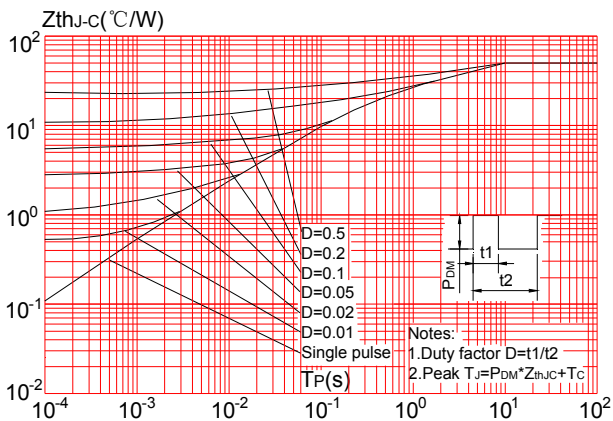
**Figure 9:** Maximum Safe Operating Area

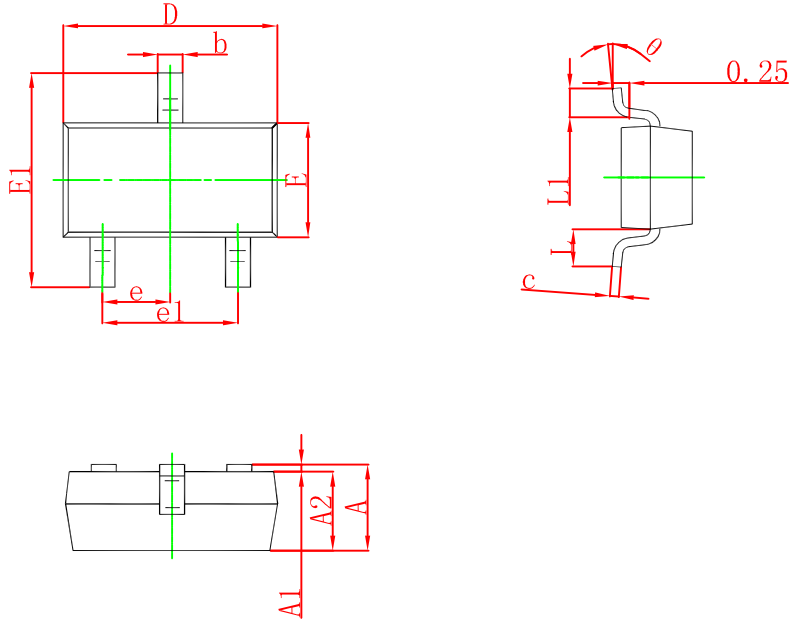


**Figure 10:** Maximum Continuous Drain Current vs. Case Temperature



**Figure.11:** Maximum Effective Transient Thermal Impedance, Junction-to-Ambient (SOP-8)



**SOT-23 PACKAGE OUTLINE DRAWING**


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°