

# KY3404

## 30V N-Channel Mosfet

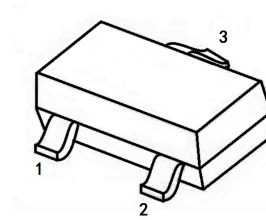
### FEATURES

- $R_{DS(ON)} \leq 25m\Omega$  (18m $\Omega$  Typ.) @ $V_{GS}=10V$
- $R_{DS(ON)} \leq 40m\Omega$  (28m $\Omega$  Typ.) @ $V_{GS}=4.5V$

### APPLICATIONS

- PWM Applications
- Load Switch
- Power Management

### SOT-23



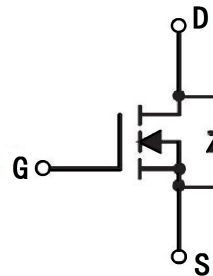
1. GATE
2. SOURCE
3. DRAIN

### MARKING



3404:Device Code

### N-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	$T_a = 25^\circ C$	5.8
		$T_a = 100^\circ C$	4
$I_{DM}$	Pulsed Drain Current <small>note1</small>	30	A
$P_D$	Power Dissipation	$T_a = 25^\circ C$	1.5
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	85	$^\circ C/W$
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to +150	$^\circ C$

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

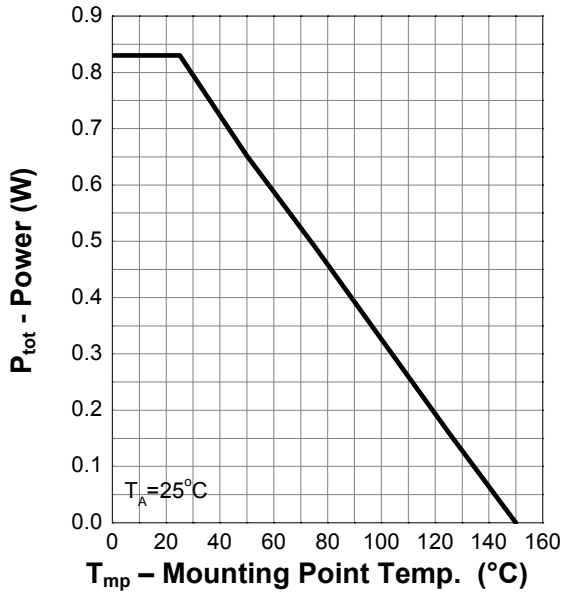
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	30	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 30V,$ $V_{GS} = 0V, T_J = 25^\circ C$	-	-	1	$\mu A$
$I_{GSS}$	Gate to Body Leakage 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	1.5	2.5	V
$R_{DS(on)}$	Static Drain-Source On-Resistance <sup>note2</sup>	$V_{GS} = 10V, I_D = 5A$	-	18	25	m $\Omega$
		$V_{GS} = 4.5V, I_D = 4A$	-	28	40	
$g_{FS}$	Forward Transconductance	$V_{DS} = 5V, I_D = 5A$	3	5.8	-	S
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS} = 15V, V_{GS} = 0V,$ $f = 1.0MHz$	-	560	-	pF
$C_{oss}$	Output Capacitance		-	125	-	pF
$C_{rss}$	Reverse Transfer Capacitance		-	90	-	pF
$Q_g$	Total Gate Charge	$V_{DS} = 10V, I_D = 3.6A,$ $V_{GS} = 5V$	-	7	-	nC
$Q_{gs}$	Gate-Source Charge		-	1.5	-	nC
$Q_{gd}$	Gate-Drain("Miller") Charge		-	3	-	nC
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-On Delay Time	$V_{GS} = 10V, V_{DS} = 15V,$ $R_G = 2.5\Omega, I_D = 5.5A$	-	10	-	ns
$t_r$	Turn-On Rise Time		-	4	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	27	-	ns
$t_f$	Turn-Off Fall Time		-	5	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
$I_S$	Maximum Continuous Drain to Source Diode Forward Current		-	-	5.8	A
$I_{SM}$	Maximum Pulsed Drain to Source Diode Forward Current		-	-	30	A
$V_{SD}$	Drain to Source Diode Forward Voltage	$V_{GS} = 0V, I_{SD} = 1.7A,$ $T_J = 25^\circ C$	-	-	1.2	V

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

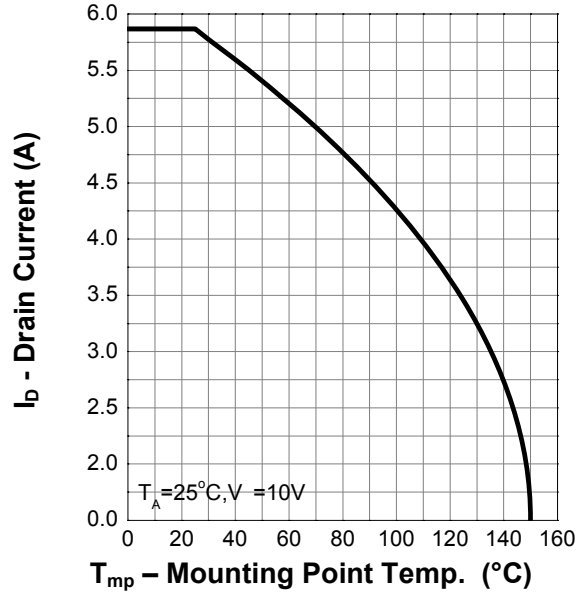
 2. Pulse Test: Pulse width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$

**TYPICAL PERFORMANCE CHARACTERISTICS**

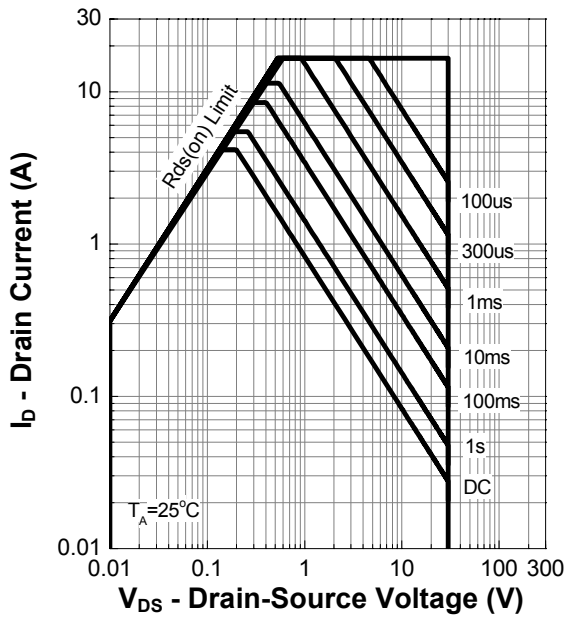
**Power Capability**



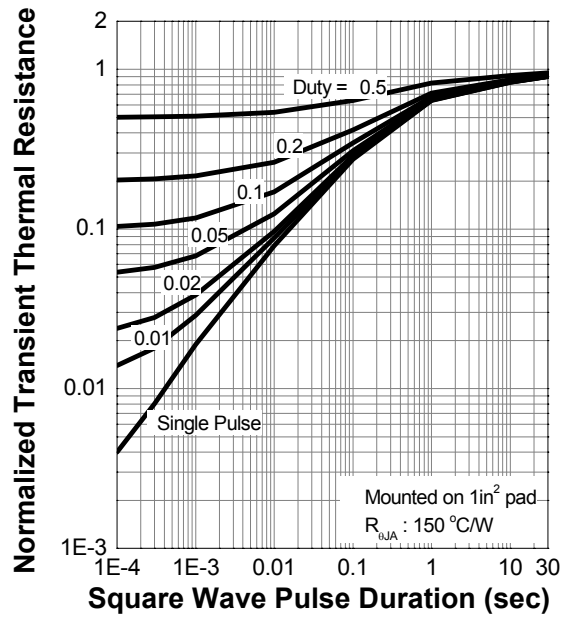
**Current Capability**



**Safe Operation Area**

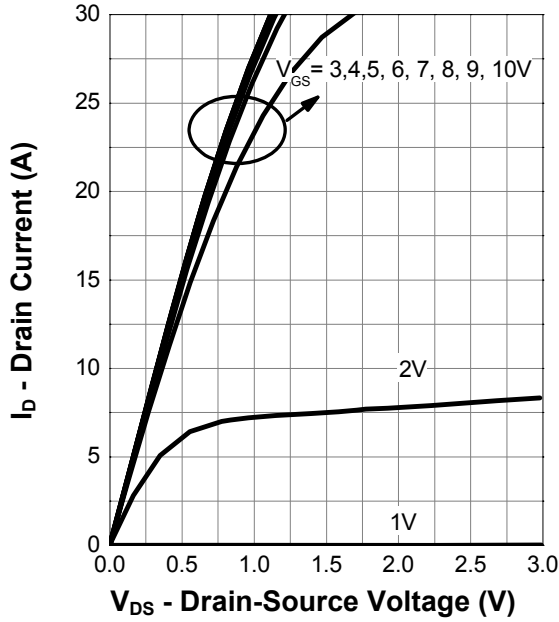


**Transient Thermal Impedance**

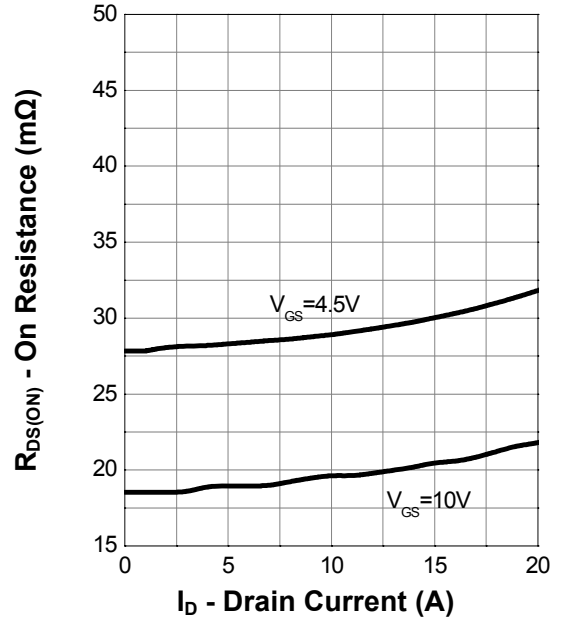


**TYPICAL PERFORMANCE CHARACTERISTICS (cont.)**

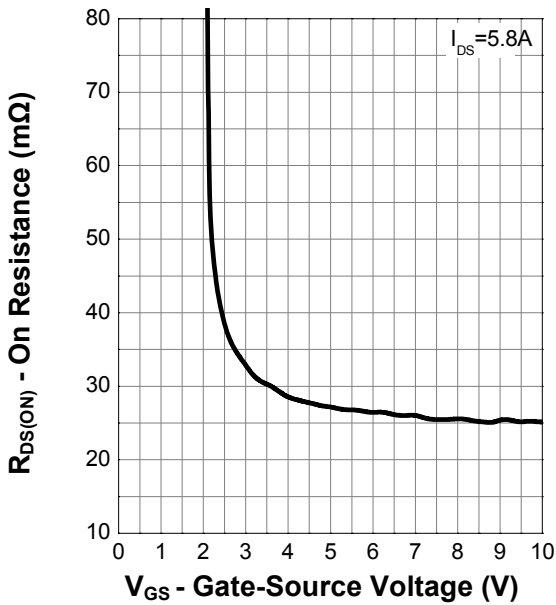
**Output Characteristics**



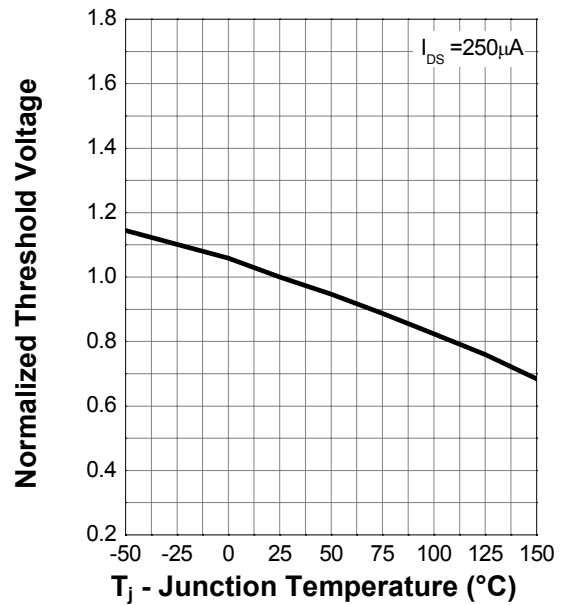
**On Resistance**

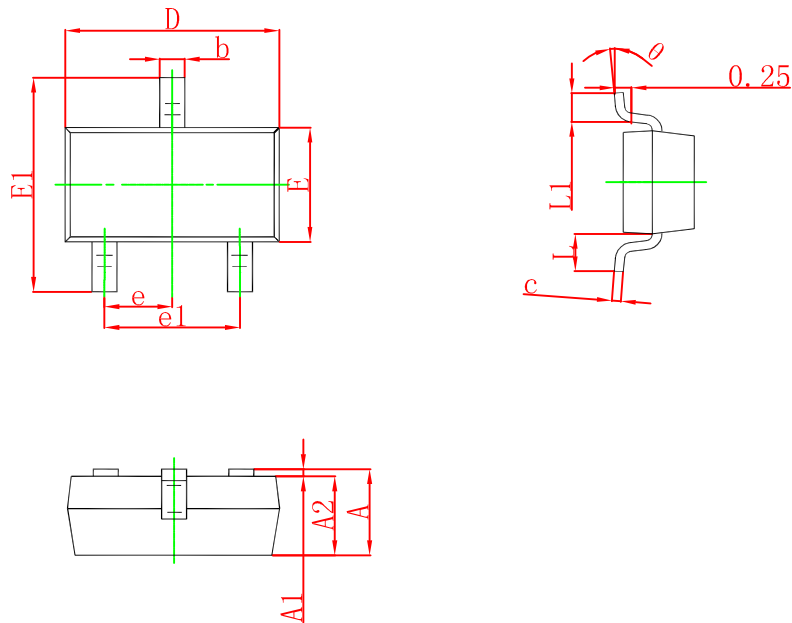


**Transfer Characteristics**



**Normalized Threshold Voltage**



**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°