



## 30V 5.8A N-channel MOSFET

### Features

- $V_{DS}=30V$ ,  $I_D=5.8A$
- $R_{DS(ON)} < 50\ m\Omega$  @  $V_{GS} = 2.5V$   
 $R_{DS(ON)} < 40m\Omega$  @  $V_{GS} = 4.5V$   
 $R_{DS(ON)} < 35m\Omega$  @  $V_{GS} = 10V$
- High Power and Current Handling Capability
- Lead Free Product is Acquired
- Surface Mount Package

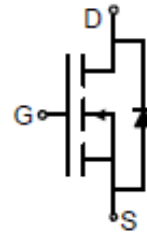
### Application

- PWM Applications
- Load Switch
- Power Management

### Package



SOT-23



### Absolute Maximum Ratings ( $T_C=25^\circ C$ unless otherwise specified)

Symbol	Parameter	Max.	Units
$V_{DSS}$	Drain-Source Voltage	30	V
$V_{GSS}$	Gate-Source Voltage	$\pm 12$	V
$I_D$	Continuous Drain Current	$T_C = 25^\circ C$	5.8
		$T_C = 100^\circ C$	4
$I_{DM}$	Pulsed Drain Current <sup>note1</sup>	30	A
$P_D$	Power Dissipation	$T_C = 25^\circ C$	1.4
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	1.0	$^\circ C/W$
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to +150	$^\circ C$

**Electrical Characteristics** ( $T_C=25^{\circ}\text{C}$  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	33	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$	-	-	1	$\mu A$
$I_{GSS}$	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.7	0.9	1.4	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note2</small>	$V_{GS}=2.5V, I_D=4A$	-	45	50	m $\Omega$
		$V_{GS}=4.5V, I_D=2.9A$	-	31	40	
		$V_{GS}=10V, I_D=2.9A$	-	28	35	
$g_{FS}$	Forward Transconductance	$V_{DS}=5V, I_D=2.9A$	10	-	-	S
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0MHz$	-	623	-	pF
$C_{oss}$	Output Capacitance		-	99	-	pF
$C_{rSS}$	Reverse Transfer Capacitance		-	77	-	pF
$Q_g$	Total Gate Charge	$V_{DS}=15V, I_D=5.8A,$ $V_{GS}=4.5V$	-	9.5	-	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	$V_{DD}=15V, I_D=2.9A,$ $R_{GEN}=3\Omega, V_{GS}=10V$	-	3.3	-	ns
$t_r$	Turn-on Rise Time		-	4.8	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	26	-	ns
$t_f$	Turn-off Fall Time		-	4	-	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	$V_{GS}=0V, I_S=2.9A$	-	0.75	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

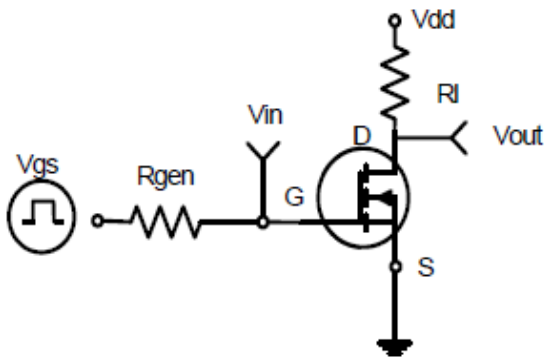


Figure1:Switching Test Circuit

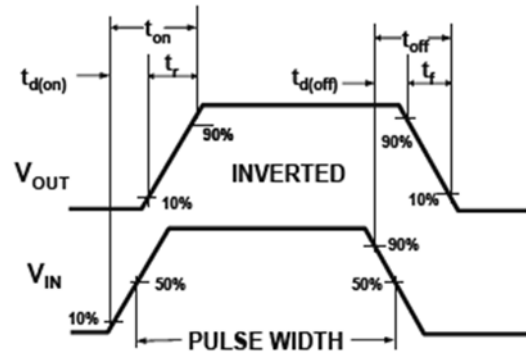
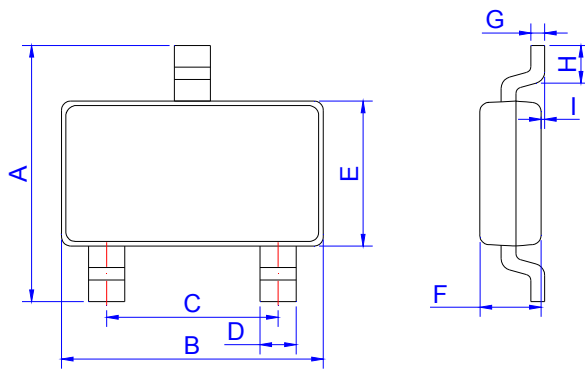


Figure2:Switching Waveforms

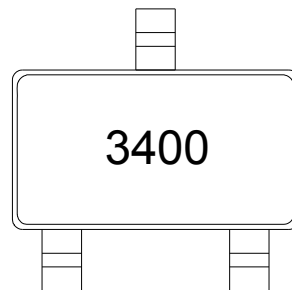
### Package Mechanical Data



SOT-23

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.30	2.40	2.50	0.091	0.095	0.098
B	2.80	2.90	3.00	0.110	0.114	0.118
C	1.90 REF			0.075 REF		
D	0.35	0.40	0.45	0.014	0.016	0.018
E	1.20	1.30	1.40	0.047	0.051	0.055
F	0.90	1.00	1.10	0.035	0.039	0.043
G		0.10	0.15		0.004	0.006
H	0.20			0.008		
I	0		0.10	0		0.004

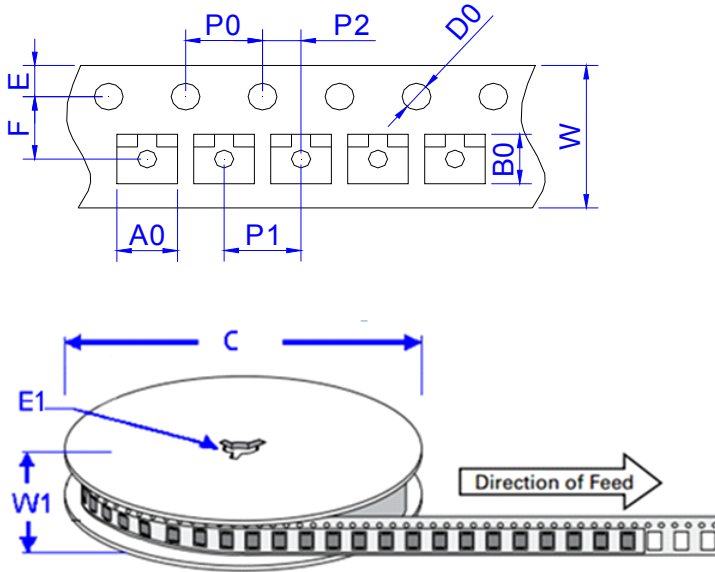
### Marking



3400: Device Code



**Reel Spectification-SOT-23**



Ref.	Dimensions	
	Millimeters	Inches
A0	3.15 ± 0.3	0.124 ± 0.012
B0	2.77 ± 0.3	0.109 ± 0.012
C	178	7.0
D0	1.50±0.1	0.059 ± 0.004
E	1.75 ± 0.2	0.069 ± 0.008
E1	13.3±0.3	0.524± 0.012
F	3.5 ± 0.2	0.138 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	4.00 ± 0.2	0.157 ± 0.008
P2	2.00 ± 0.2	0.079 ± 0.008
W	8.00 ± 0.2	0.315 ± 0.008
W1	11.5±1.0	0.453 ± 0.039

**Ordering Information**

OUTLINE	PACKAGE TYPE	QUANTITY REEL	DESCRIPTION
TAPING	SOT-23	3,000pcs	7 inch reel pack