



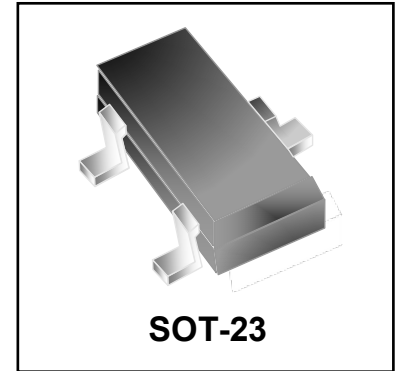
P-Channel Enhancement MOSFET

Features

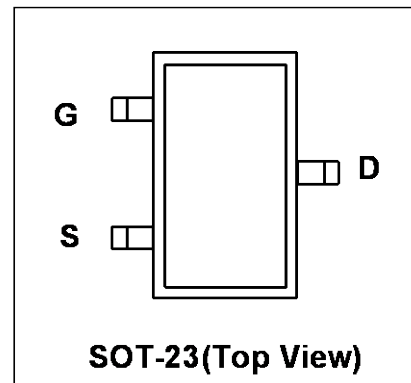
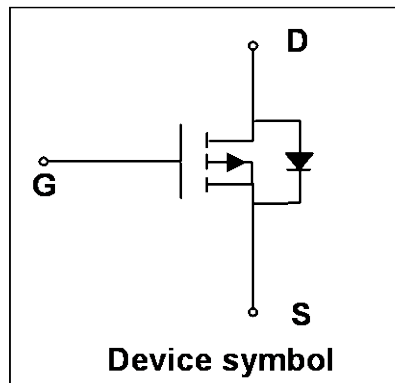
- Small Signal MOSFETs
- $V_{DS} = -30\text{ V}$, $I_D = -4.2\text{ A}$
 $R_{DS(on)} < 60\text{ m}\Omega$ @ $V_{GS} = -10\text{ V}$
 $R_{DS(on)} < 75\text{ m}\Omega$ @ $V_{GS} = -4.5\text{ V}$
- Trench LV MOSFET Technology

Mechanical Characteristics

- SOT-23 Package
- Marking : Making Code
- RoHS Compliant



Schematic & PIN Configuration



Absolute Maximum Rating ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Units
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	-4.2	A
	$T_A = 25^\circ\text{C}$		
Pulsed Drain Current ¹	I_{DM}	-16	A
Power Dissipation	P_D	1.2	W
	$T_A = 25^\circ\text{C}$		
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Value	Units
Thermal Resistance from Junction to Ambient ²	$R_{\theta JA}$	104	$^\circ\text{C/W}$

**Electrical Characteristics** ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -30V, V_{GS} = 0V$	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 12V$	-	-	± 100	nA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.7	-1	-1.3	V
Drain-Source on-Resistance ³	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -4.2A$	-	42	60	m Ω
		$V_{GS} = -4.5V, I_D = -4A$	-	52	75	
		$V_{GS} = -2.5V, I_D = -1A$	-	60	90	
Dynamic Characteristics⁴						
Input Capacitance	C_{iss}	$V_{DS} = -15V, V_{GS} = 0V,$ $f = 1MHz$	-	745	-	pF
Output Capacitance	C_{oss}		-	70	-	
Reverse Transfer Capacitance	C_{rss}		-	57	-	
Switching Characteristics⁴						
Total Gate Charge	Q_g	$V_{GS} = -4.5V, V_{DS} = -15V,$ $I_D = -4.2A$	-	8	-	nC
Gate-Source Charge	Q_{gs}		-	1.8	-	
Gate-Drain Charge	Q_{gd}		-	2.7	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS} = -10V, V_{DD} = -15V,$ $I_D = -4.2A, R_{GEN} = 6\Omega$	-	7	-	ns
Rise Time	t_r		-	3	-	
Turn-off Delay Time	$t_{d(off)}$		-	30	-	
Fall Time	t_f		-	12	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage ³	V_{SD}	$I_S = -4.2A, V_{GS} = 0V$	-	-	-1.2	V
Continuous Source Current	I_S		-	-	-4.2	A

Notes:

1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$
2. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
3. Pulse Test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. This value is guaranteed by design hence it is not included in the production test.



Typical Characteristics

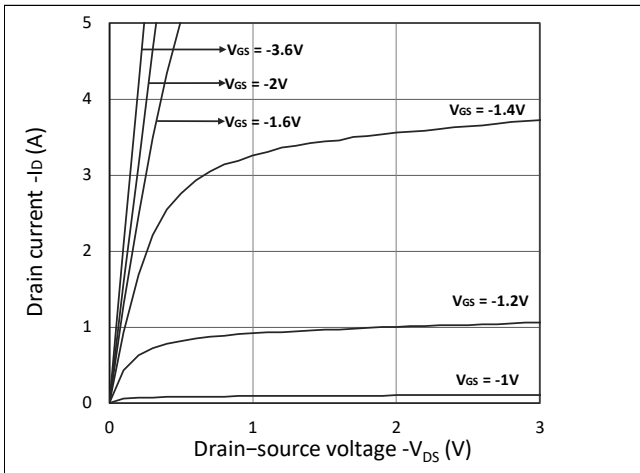


Figure 1. Output Characteristics

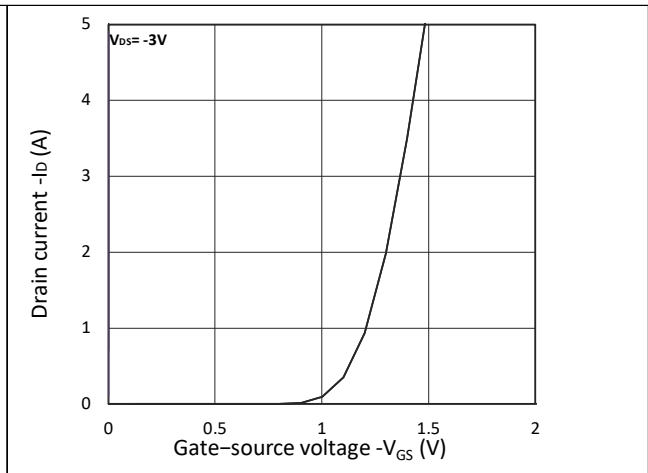


Figure 2. Transfer Characteristics

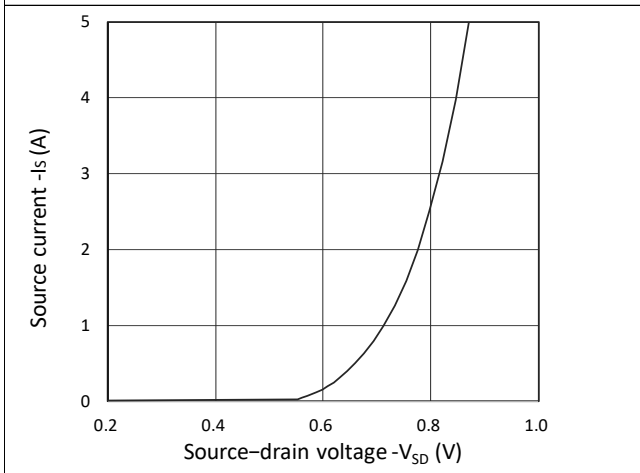


Figure 3. Forward Characteristics of Reverse

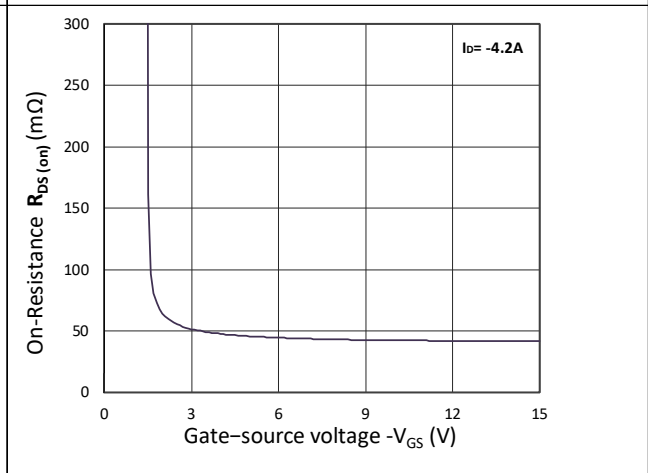


Figure 4. $R_{DS(on)}$ vs. V_{GS}

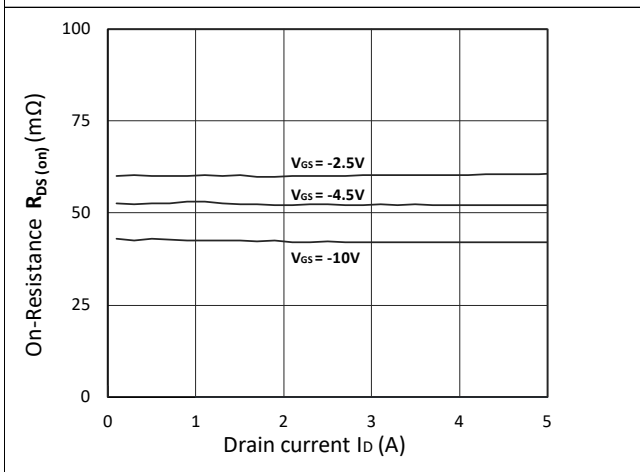


Figure 5. $R_{DS(on)}$ vs. I_D

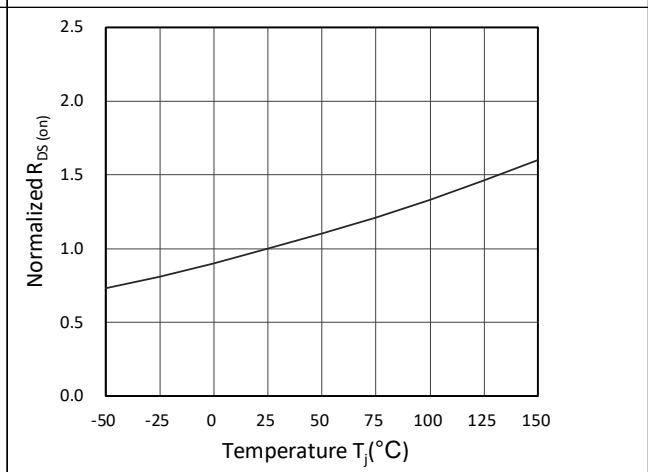


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

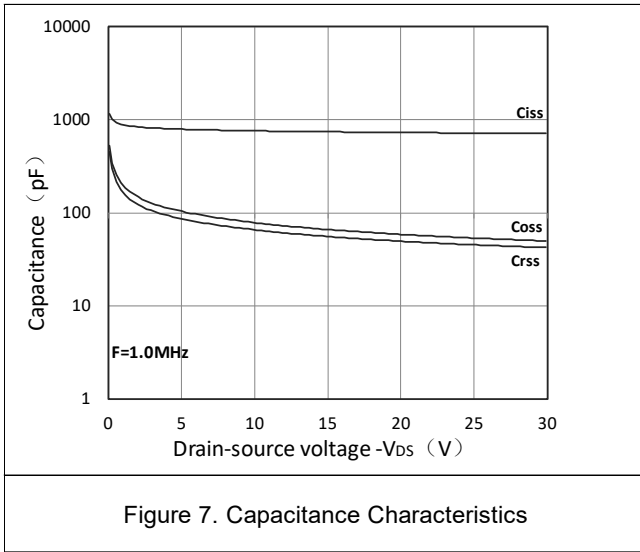


Figure 7. Capacitance Characteristics

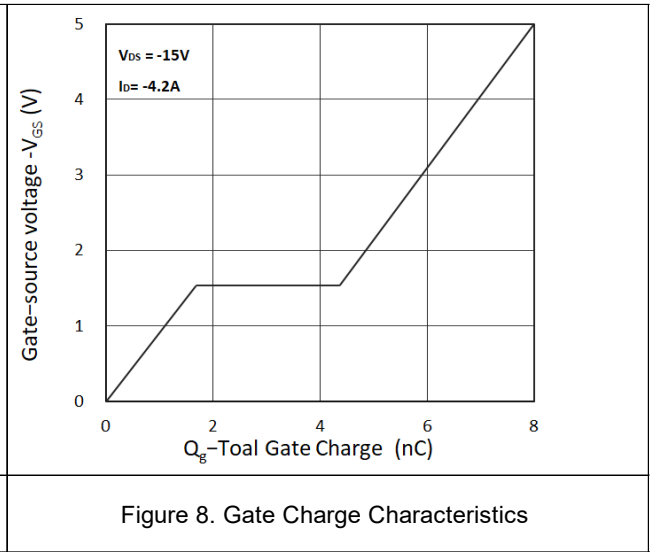


Figure 8. Gate Charge Characteristics



Outline Drawing – SOT-23

PACKAGE OUTLINE

SOT-23

DIMENSIONS				
SYMBOL	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	0.90	1.15	0.035	0.045
A1	0.00	0.10	0.000	0.004
b	0.30	0.50	0.012	0.020
c	0.08	0.15	0.003	0.006
D	2.80	3.00	0.110	0.118
E	2.25	2.55	0.089	0.100
E1	1.20	1.40	0.047	0.055
e	0.95 BSC		0.037BSC	
e1	1.80	2.00	0.071	0.079
L	0.55REF		0.022REF	
θ	0°	8°	0°	8°

DIMENSIONS		
DIM	INCHES	MILLIMETERS
M	0.080	2.02
C	0.032	0.80
Z	0.111	2.82
e	0.037 BSC	0.95 BSC
e1	0.075 BSC	1.90 BSC
b	0.032	0.80

Notes

1. Dimensioning and tolerances per ANSI Y14.5M, 1985.
2. Controlling Dimension: Inches
3. Pin 3 is the cathode (Unidirectional Only).
4. Dimensions are exclusive of mold flash and metal burrs.

Marking Codes

Part Number	WD3401
Marking Code	

Package Information

Qty: 3k/Reel