



Micro Commercial Components



Micro Commercial Components  
 20736 Marilla Street Chatsworth  
 CA 91311  
 Phone: (818) 701-4933  
 Fax: (818) 701-4939

# SI3401

## P-Channel Enhancement Mode Field Effect Transistor

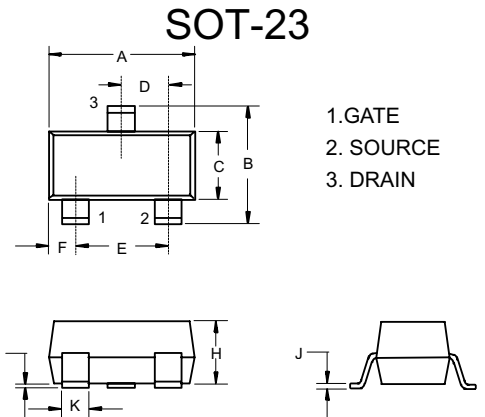
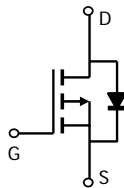
### Features

- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- High dense cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- Lead free product is acquired
- SOT-23 Package
- Marking Code: R1

### Maximum Ratings @ 25°C Unless Otherwise Specified

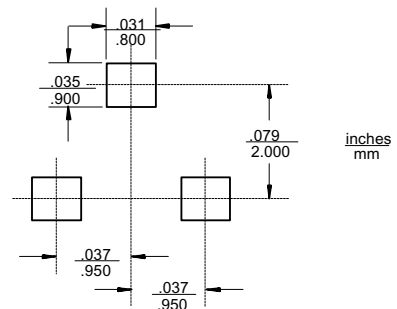
Symbol	Parameter	Rating	Unit
$V_{DS}$	Drain-source Voltage	-30	V
$I_D$	Drain Current-Continuous	-4.2	A
$I_{DM}$	Drain Current-Pulsed	30	A
$V_{GS}$	Gate-source Voltage	$\pm 12$	V
$P_D$	Total Power Dissipation	0.35	W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	357	$^{\circ}C/W$
$T_J$	Operating Junction Temperature	-55 to +150	$^{\circ}C$
$T_{STG}$	Storage Temperature	-55 to +150	$^{\circ}C$

### Internal Block Diagram



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.110	.120	2.80	3.04	
B	.083	.098	2.10	2.64	
C	.047	.055	1.20	1.40	
D	.035	.041	.89	1.03	
E	.070	.081	1.78	2.05	
F	.018	.024	.45	.60	
G	.0005	.0039	.013	.100	
H	.035	.044	.89	1.12	
J	.003	.007	.085	.180	
K	.015	.020	.37	.51	

### Suggested Solder Pad Layout



# SI3401



Micro Commercial Components

## Electrical characteristics (T<sub>a</sub>=25°C unless otherwise noted)

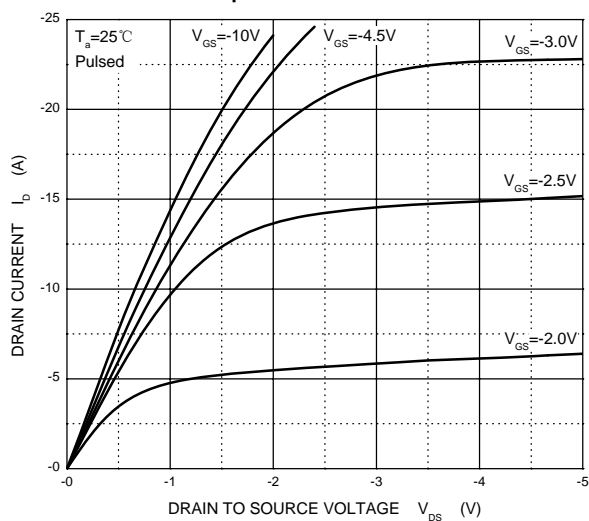
Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Off characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-30			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -24V, V <sub>GS</sub> = 0V			-1	μA
Gate-source leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V			±100	nA
<b>On characteristics</b>						
Drain-source on-resistance (note 1)	R <sub>DS(on)</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> = -4.2A			65	mΩ
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -4A			75	mΩ
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -1A			90	mΩ
Forward transconductance (note 1)	g <sub>FS</sub>	V <sub>DS</sub> = -5V, I <sub>D</sub> = -5A	7			S
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-0.7		-1.3	V
<b>Dynamic characteristics (note 2)</b>						
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0V, f = 1MHz		954		pF
Output capacitance	C <sub>oss</sub>			115		pF
Reverse transfer capacitance	C <sub>rss</sub>			77		pF
<b>Switching characteristics (note 2)</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>GS</sub> = -10V, V <sub>DS</sub> = -15V, R <sub>L</sub> = 3.6Ω, R <sub>GEN</sub> = 6Ω			6.3	ns
Turn-on rise time	t <sub>r</sub>				3.2	ns
Turn-off delay time	t <sub>d(off)</sub>				38.2	ns
Turn-off fall Time	t <sub>f</sub>				12	ns
<b>Drain-source diode characteristics and maximum ratings</b>						
Diode forward voltage (note 1)	V <sub>SD</sub>	I <sub>S</sub> = -1A, V <sub>GS</sub> = 0V			-1	V

### Note :

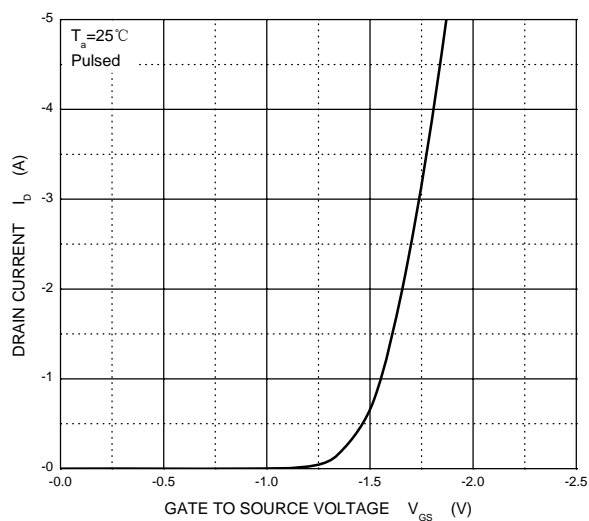
1. Pulse Test : Pulse width ≤ 300μs, duty cycle ≤ 2%.
2. These parameters have no way to verify.

## Typical characteristics

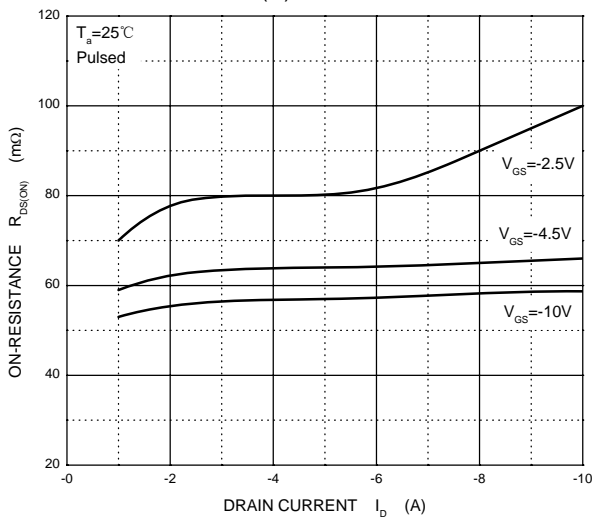
Output Characteristics



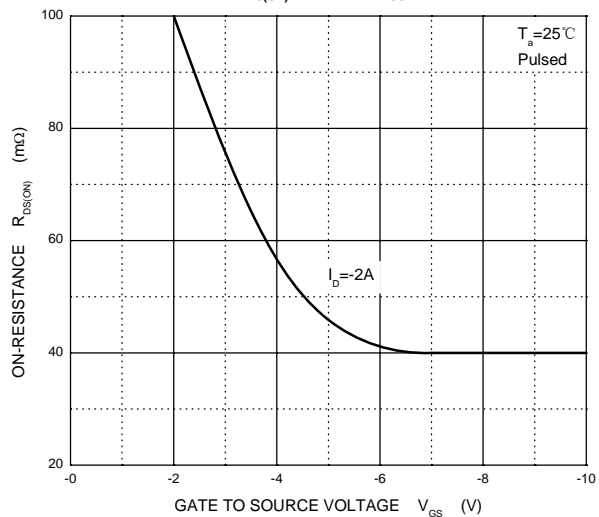
Transfer Characteristics



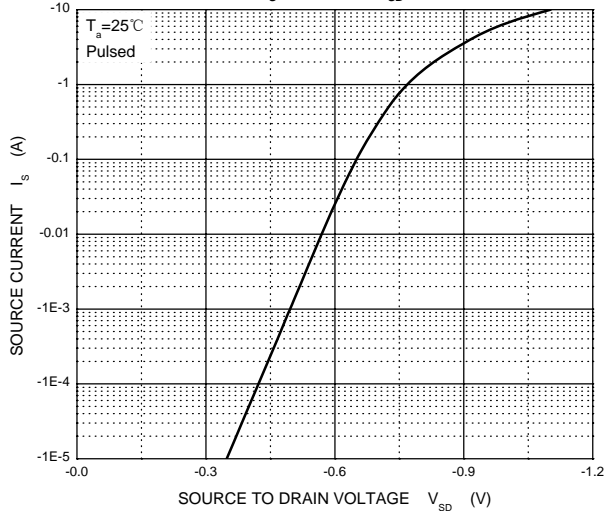
$R_{DS(ON)}$  —  $I_D$



$R_{DS(ON)}$  —  $V_{GS}$



$I_S$  —  $V_{SD}$





Micro Commercial Components

Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

**\*\*\*IMPORTANT NOTICE\*\*\***

**Micro Commercial Components Corp.** reserves the right to make changes without further notice to any product herein to make corrections, modifications , enhancements , improvements , or other changes . **Micro Commercial Components Corp .** does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights ,nor the rights of others . The user of products in such applications shall assume all risks of such use and will agree to hold **Micro Commercial Components Corp .** and all the companies whose products are represented on our website, harmless against all damages.

**\*\*\*LIFE SUPPORT\*\*\***

MCC's products are not authorized for use as critical components in life support devices or systems without the express written approval of Micro Commercial Components Corporation.

**\*\*\*CUSTOMER AWARENESS\*\*\***

Counterfeiting of semiconductor parts is a growing problem in the industry. Micro Commercial Components (MCC) is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. MCC strongly encourages customers to purchase MCC parts either directly from MCC or from Authorized MCC Distributors who are listed by country on our web page cited below. Products customers buy either from MCC directly or from Authorized MCC Distributors are genuine parts, have full traceability, meet MCC's quality standards for handling and storage. **MCC will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources.** MCC is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.