



# THE DATASHEET OF SIL2308-TP





Micro Commercial Components



Micro Commercial Components  
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# SIL2308

## Dual N&P-Channel MOSFET

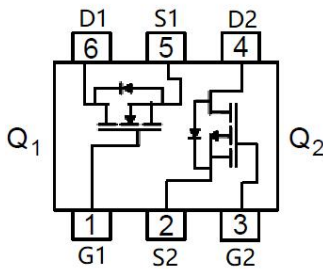
### Features

- 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
- Low Input/Output Leakage
- Marking Code: 2038

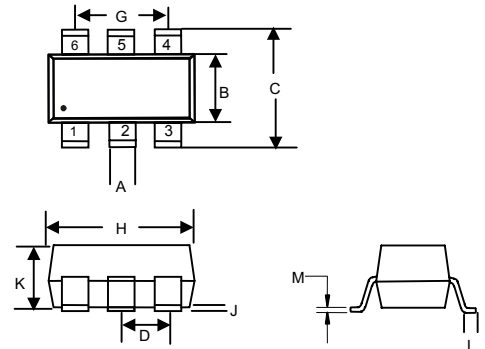
### Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
V <sub>DS</sub>	Drain-source Voltage	N-Channel	20
		P-Channel	-20
I <sub>D</sub>	Drain Current-Continuous	N-Channel	5
		P-Channel	-4
V <sub>GS</sub>	Gate-source Voltage	N-Channel	±8
		P-Channel	±12
R <sub>θJA</sub>	Thermal Resistance Junction to Ambient	277	°C/W
T <sub>J</sub>	Operating Junction Temperature	-55 to +150	°C
T <sub>STG</sub>	Storage Temperature	-55 to +150	°C

### Equivalent Circuit



### SOT23-6L



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	.012	.020	0.30	0.50	
B	.051	.070	1.30	1.80	
C	.087	.126	2.20	3.20	
D	.037		0.95BSC		
G	.074		1.90BSC		
H	.106	.122	2.70	3.10	
J	.002	.006	0.05	0.15	
K	.035	.051	0.90	1.30	
L	.012	.024	0.30	0.60	
M	.003	.008	0.08	0.22	

**Electrical characteristics - N-Channel Q1 (T<sub>A</sub>=25 °C, unless otherwise noted)**

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	20			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> = 0V			1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±12V, V <sub>DS</sub> = 0V			±0.1	μA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.5	0.7	1	V
Drain-source on-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =4.5A			38	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =3.5A			45	
Forward transconductance	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =7A	9			S
Diode forward voltage	V <sub>SD</sub>	I <sub>S</sub> =1.7A, V <sub>GS</sub> =0V		0.7	1.3	V
<b>Dynamic characteristics</b>						
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =4A		11		nC
Gate-source charge	Q <sub>gs</sub>			2.3		
Gate-drain charge	Q <sub>gd</sub>			2.5		
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =8V, V <sub>GS</sub> =0V, f=1MHz		800		pF
Output Capacitance	C <sub>oss</sub>			155		
Reverse Transfer Capacitance	C <sub>rss</sub>			125		
<b>Switching Characteristics</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =10V , V <sub>GS</sub> =4V , I <sub>D</sub> =1A R <sub>G</sub> =10Ω		18		ns
Turn-on rise time	t <sub>r</sub>			5		
Turn-off delay time	t <sub>d(off)</sub>			43		
Turn-off fall time	t <sub>f</sub>			20		

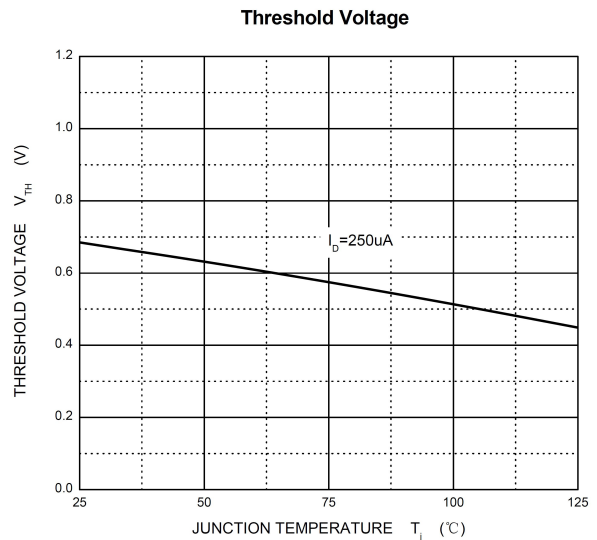
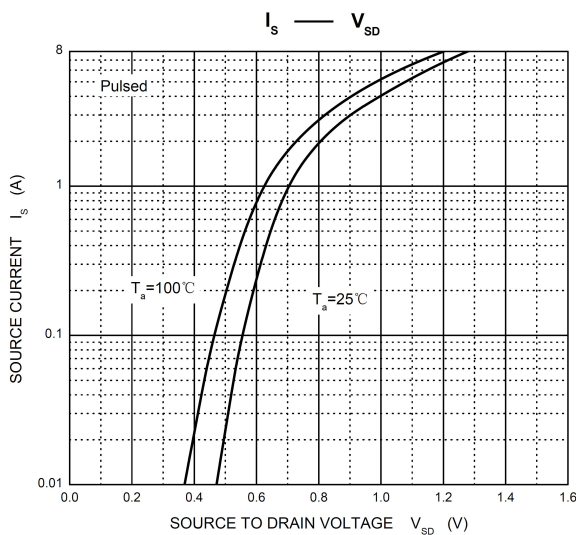
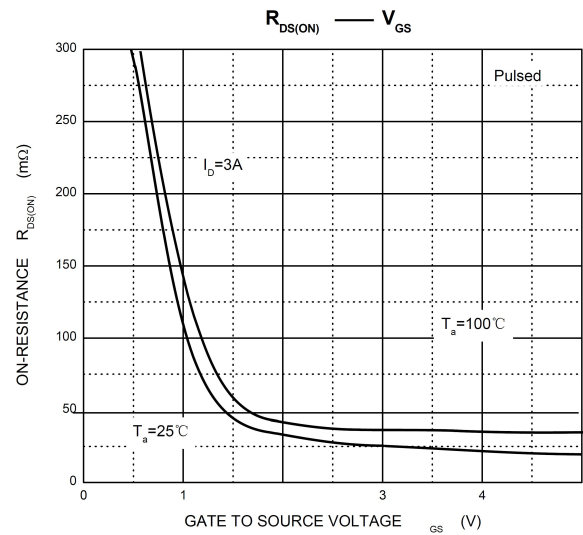
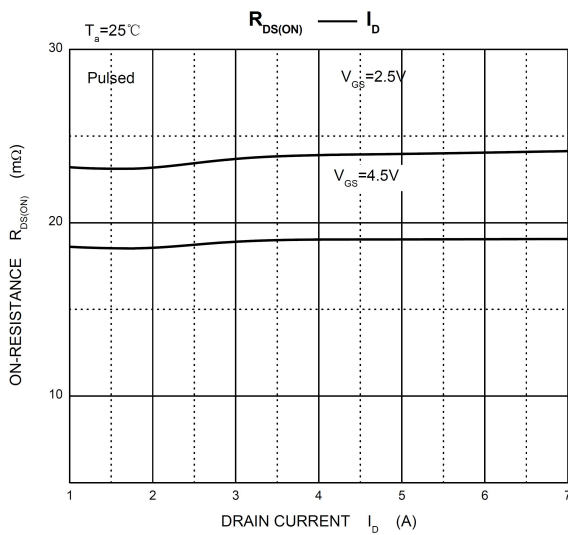
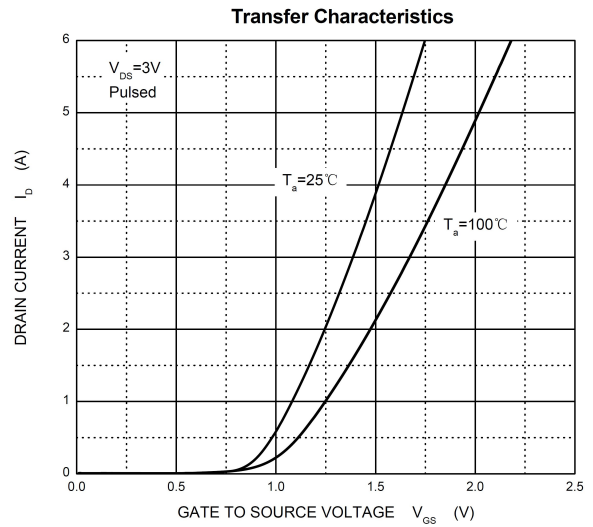
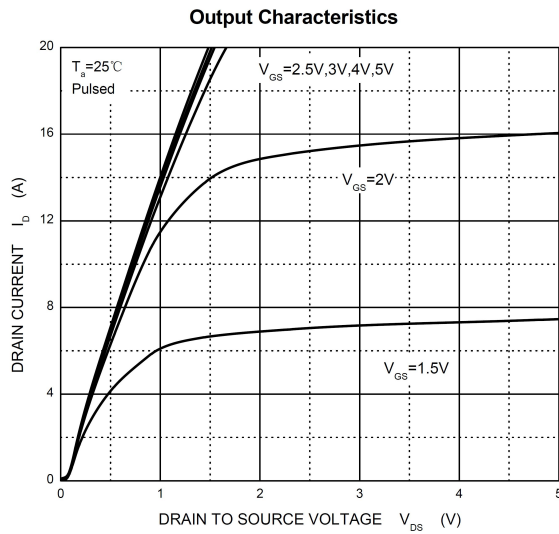
- Notes :**
1. Pulse Test : Pulse width≤300μs, duty cycle≤0.5%.
  2. Guaranteed by design, not subject to production testing.

### Electrical characteristics - P-Channel Q2 (T<sub>A</sub>=25 °C, unless otherwise noted)

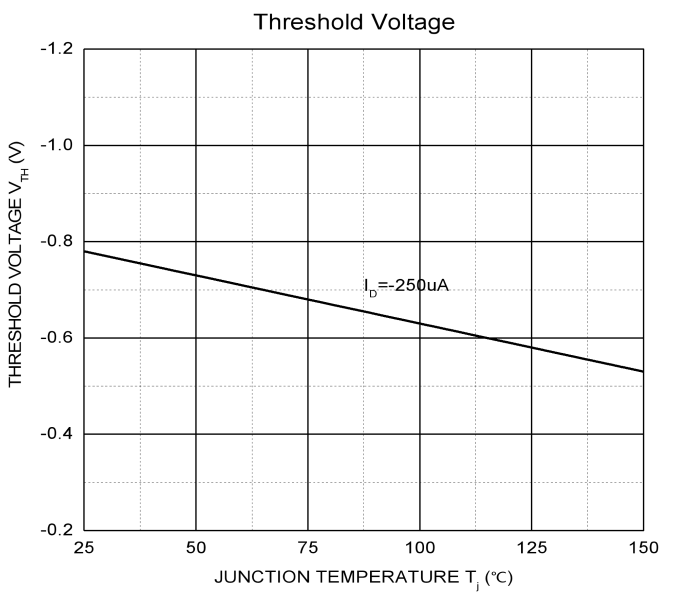
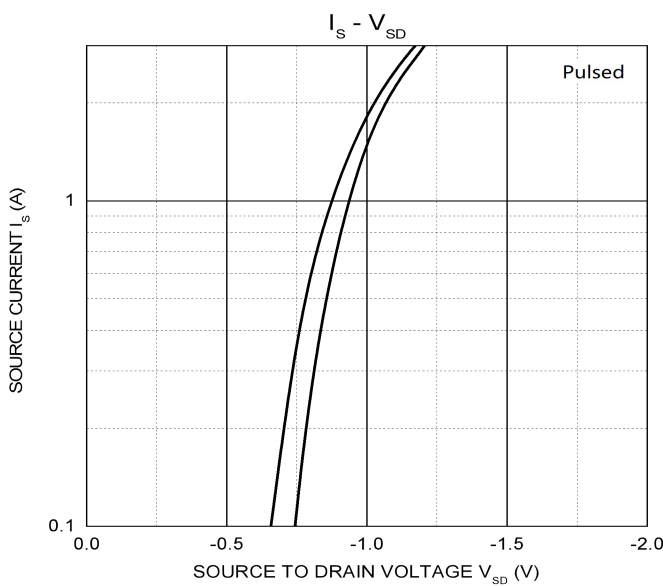
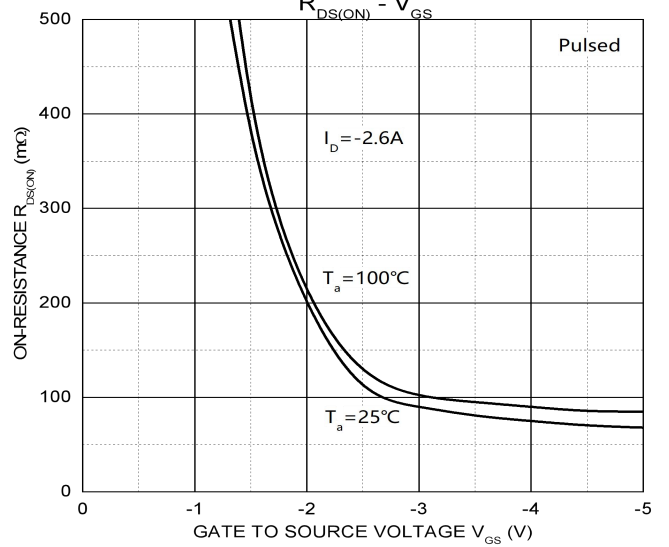
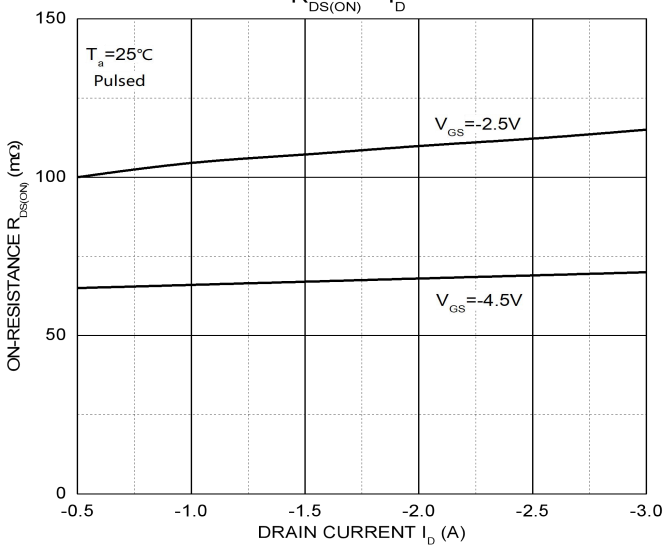
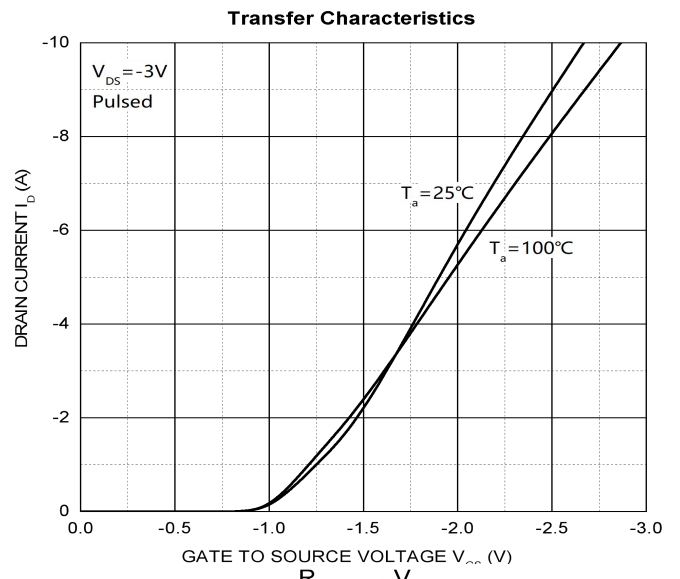
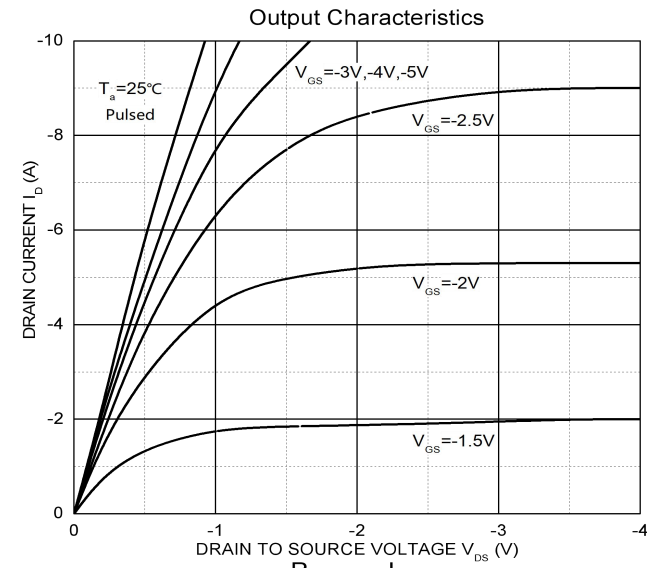
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA	-20			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> = -16V, V <sub>GS</sub> = 0V			-1	μA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V			±100	nA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA	-0.5	-0.7	-1	V
Drain-source on-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -0.5A		70	90	mΩ
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -0.5A		90	110	
Forward transconductance	g <sub>FS</sub>	V <sub>DS</sub> = -5V, I <sub>D</sub> = -2A	5			S
<b>Dynamic characteristics</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V, f = 1MHz		405		pF
Output Capacitance	C <sub>oss</sub>			75		
Reverse Transfer Capacitance	C <sub>rss</sub>			55		
Gate resistance	R <sub>g</sub>	f = 1MHz		6		Ω
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -3A		3.3	12	nC
Gate-Source Charge	Q <sub>gs</sub>			0.7		
Gate-Drain Charge	Q <sub>gd</sub>			1.3		
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> = -10V, V <sub>GEN</sub> = -4.5V, I <sub>D</sub> = -1A R <sub>L</sub> = 10Ω, R <sub>GEN</sub> = 1Ω		11		ns
Turn-on rise time	t <sub>r</sub>			35		
Turn-off delay time	t <sub>d(off)</sub>			30		
Turn-off fall time	t <sub>f</sub>			10		
<b>Source-Drain Diode characteristics</b>						
Diode Forward voltage	V <sub>DS</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = -1.25A		-0.7	-1.3	V

- Notes :**
1. Pulse Test : Pulse width ≤ 300μs, duty cycle ≤ 0.5%.
  2. Guaranteed by design, not subject to production testing.

## Typical Characteristics - N-Channel Q1



## Typical Characteristics - P-Channel Q2





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Ordering Information :

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

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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