



Micro Commercial Components



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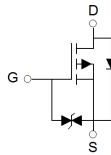
# SI3139KL

## P-Channel MOSFET

### Features

- Lead Free Product is Acquired
- Halogen free available upon request by adding suffix "-HF"
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Operated at Low Logic Level Gate Drive
- P-Channel Switch with Low RDS(on)
- Surface Mount Package
- Marking :39

Equivalent Circuit



### Absolute maximum ratings @ 25°C

Symbol	Parameter	Value	Unit
V <sub>DS</sub>	Drain-source Voltage	-20	V
V <sub>GS</sub>	Gate-source Voltage	±12	V
I <sub>D</sub>	Continuous Drain Current <sup>(1)</sup>	-0.68	A
I <sub>DM</sub>	Pulsed Drain Current	-1.2	A
P <sub>D</sub>	Total Power Dissipation <sup>(2)</sup>	100	mW
T <sub>J</sub>	Operating Junction Temperature	-55 to +150	°C
T <sub>STG</sub>	Storage Temperature	-55 to +150	°C
T <sub>L</sub>	Lead Temperature for Soldering Purposes	260	°C
R <sub>thJA</sub>	Thermal Resistance from Junction to Ambient	1250	°C/W

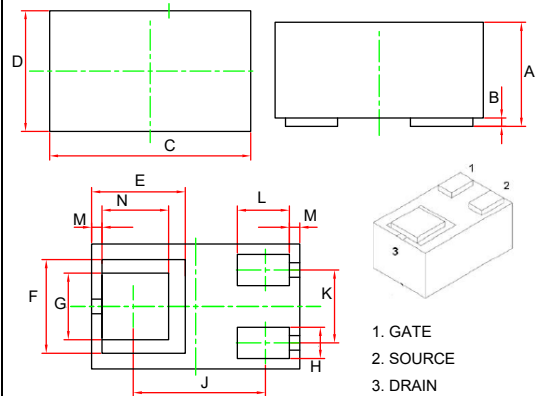
### Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Min	Typ	Max	Units	
STATIC PARAMETERS						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage (V <sub>GS</sub> =0Vdc, I <sub>D</sub> =-250µAdc)	-20	---	---	Vdc	
V <sub>GS(th)</sub>	Gate-Threshold Voltage (V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250µAdc)	-0.35	---	-1.1	Vdc	
I <sub>GSS</sub>	Gate-body Leakage (V <sub>GS</sub> =±10V, V <sub>DS</sub> =0V)	---	---	±20	µA	
I <sub>DSS</sub>	Zero Gate Voltage Drain Current (V <sub>DS</sub> =-20Vdc, V <sub>GS</sub> =0Vdc)	---	---	-1	µAdc	
V <sub>SD</sub>	Diode Forward Voltage (I <sub>S</sub> =-0.5A, V <sub>GS</sub> =0V)	---	---	-1.2	Vdc	
r <sub>DS(on)</sub>	Drain-Source On-Resistance (V <sub>GS</sub> =-4.5Vdc, I <sub>D</sub> =-1.0Adc) (V <sub>GS</sub> =-2.5Vdc, I <sub>D</sub> =-0.8Adc) (V <sub>GS</sub> =-1.8Vdc, I <sub>D</sub> =-0.5Adc)	---	---	0.52 0.70	Ω	
g <sub>FS</sub>	Forward transconductance (V <sub>DS</sub> =-10Vdc, I <sub>D</sub> =-0.5Adc)	---	1.2	---	S	
DYNAMIC PARAMETERS <sup>(4)</sup>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-16Vdc, V <sub>GS</sub> =0Vdc f=1MHz	---	113	170	pF
C <sub>OSS</sub>	Output Capacitance		---	15	25	
C <sub>rSS</sub>	Reverse Transfer capacitance		---	9	15	
SWITCHING PARAMETERS <sup>(4)</sup>						
t <sub>d(on)</sub>	Turn-on Time <sup>(3)</sup>	V <sub>DD</sub> =-4.5V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-200mA R <sub>GEN</sub> =10Ω	---	9.0	---	ns
t <sub>d(off)</sub>	Turn-off Time <sup>(3)</sup>		---	32.7	---	
t <sub>r</sub>	Rise Time <sup>(3)</sup>		---	5.8	---	
t <sub>f</sub>	Fall Time <sup>(3)</sup>		---	20.3	---	

**Notes :**

- 1.Surface mounted on FR4 board using the minimum recommended pad size.
- 2.Pulse est : Pulse width=300µs, duty cycle≤2%.
3. Switching characteristics are independent of operating junction temperatures.
4. Guaranteed design, not subject to producing.

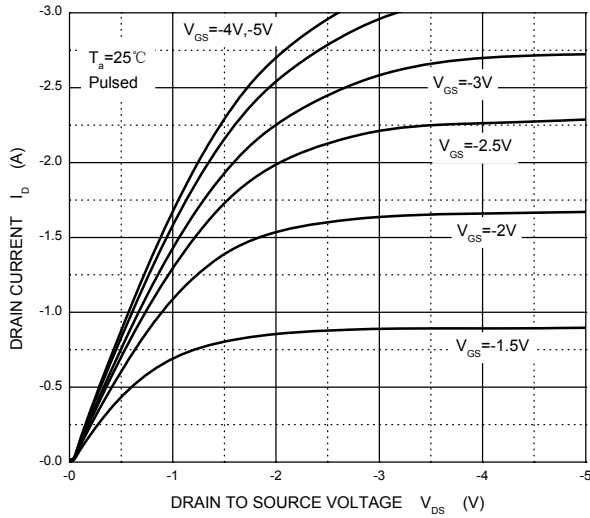
### SOT-883



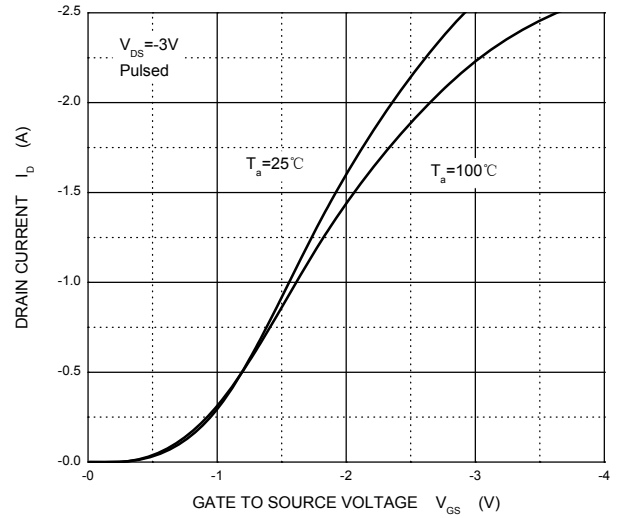
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.018	0.022	0.450	0.550	
B	0.000	0.004	0.010	0.100	
C	0.037	0.041	0.950	1.050	
D	0.022	0.026	0.550	0.650	
E	0.018REF.		0.450REF.		
F	0.018REF.		0.450REF.		
G	0.011	0.015	0.270	0.370	
H	0.004	0.008	0.100	0.200	
J	0.025REF.		0.635REF.		
K	0.012	0.016	0.300	0.400	
L	0.008	0.012	0.200	0.300	
M	0.002REF.		0.050REF.		
N	0.011	0.015	0.270	0.370	

## Typical Characteristics

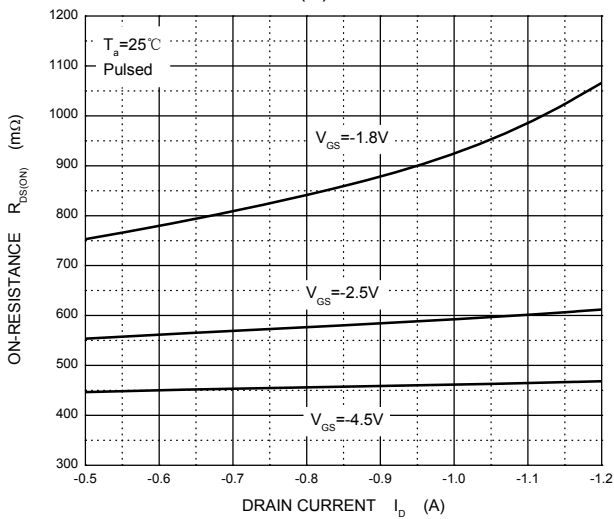
Output Characteristics



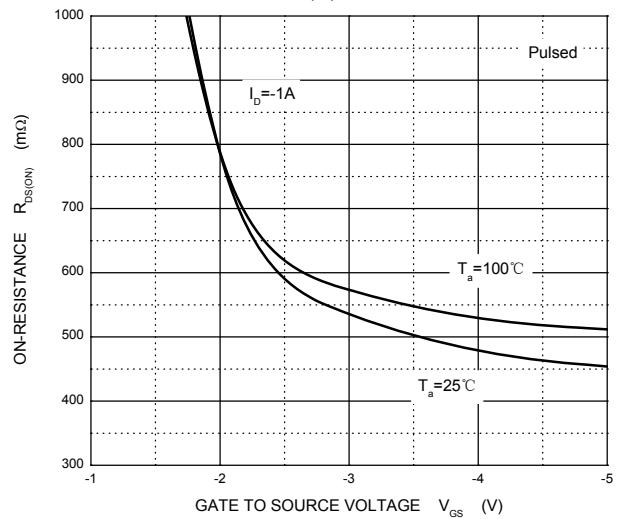
Transfer Characteristics



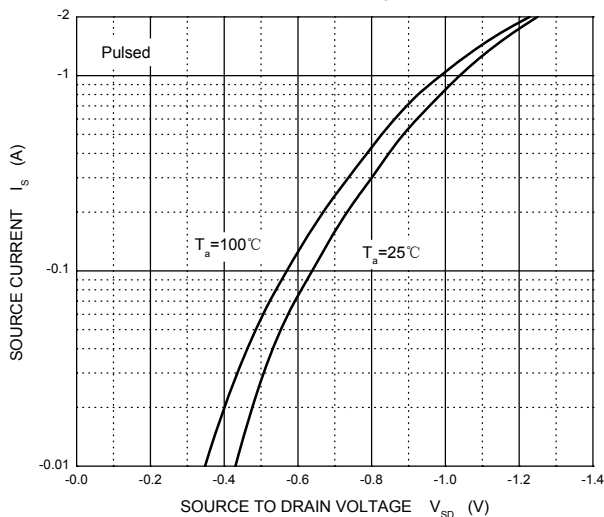
$R_{DS(ON)}$  —  $I_D$



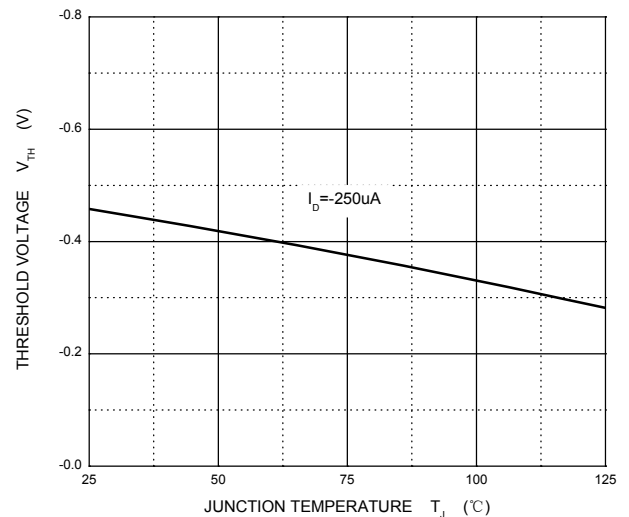
$R_{DS(ON)}$  —  $V_{GS}$



$I_s$  —  $V_{SD}$



Threshold Voltage





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Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel: 10Kpcs/Reel

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

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