



**THE DATASHEET OF
SI3139KL3-TP**



Features

- Operated at Low Logic Level Gate Drive
- P-Channel Switch with Low $R_{DS(on)}$
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

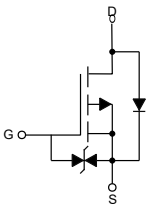
Maximum Ratings

- Operating Junction Temperature Range: -55°C to $+150^{\circ}\text{C}$
- Storage Temperature Range: -55°C to $+150^{\circ}\text{C}$
- Maximum Thermal Resistance: 1250°C/W Junction to Ambient

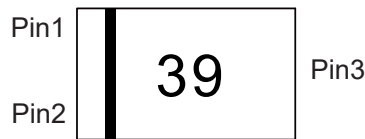
Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous ⁽²⁾	I_D	-0.66	A
Pulsed Drain Current	I_{DM}	-1.2	A
Power Dissipation ⁽³⁾	P_D	0.10	W

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

Internal Structure and Marking Code

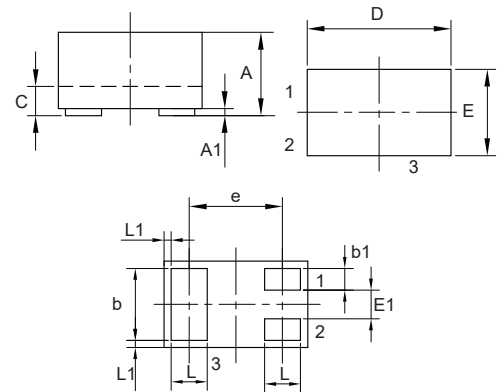


1. GATE
2. SOURCE
3. DRAIN



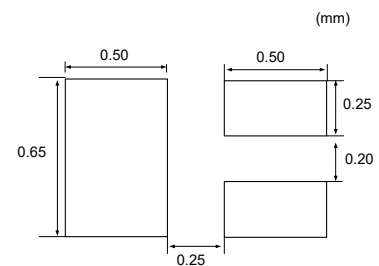
P-Channel MOSFET

DFN1006-3



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.018	0.022	0.45	0.55	
A1	0.000	0.002	0.00	0.05	
b	0.018	0.022	0.45	0.55	
b1	0.004	0.008	0.10	0.20	
c	0.005	0.007	0.12	0.18	
D	0.037	0.042	0.95	1.075	
E	0.022	0.026	0.55	0.675	
E1	0.006	0.010	0.15	0.25	
e	0.026		0.65		TYP.
L	0.008	0.012	0.20	0.30	
L1	0.0002		0.05		TYP.

Suggested Solder Pad Layout



ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20			V
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.35	-0.61	-1.1	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$			-1.0	μA
Gate-body Leakage Current	I_{GSS}	$V_{GS}=\pm 10V, V_{DS}=0V$			± 20	μA
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-1000mA$		0.45	0.52	Ω
		$V_{GS}=-2.5V, I_D=-800mA$		0.65	0.78	
		$V_{GS}=-1.8V, I_D=-500mA$		0.95		
Forward transconductance	g_{FS}	$V_{DS}=-10V, I_D=-540mA$		1.2		S
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-500mA$			-1.2	V
Dynamic Characteristics						
Input Capacitance ⁽⁴⁾	C_{iss}	$V_{DS}=-16V, V_{GS}=0V, f=1MHz$		113		pF
Output Capacitance ⁽⁴⁾	C_{oss}			15		
Reverse Transfer Capacitance ⁽⁴⁾	C_{rss}			9		
Switching Characteristics						
Turn-on Delay Time ⁽⁵⁾	$t_{d(on)}$	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-200mA, R_{GEN}=10\Omega$		9.0		ns
Turn-off Delay Time ⁽⁵⁾	$t_{d(off)}$			32.6		
Rise Time ⁽⁵⁾	t_r			5.7		
Fall Time ⁽⁵⁾	t_f			20.3		

Note:

- Surface Mounted on FR4 board using the minimum recommended pad size.
- Pulse Test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production
- Switching characteristics are independent of operating junction temperatures.

Curve Characteristics

Fig. 1 - Output Characteristics

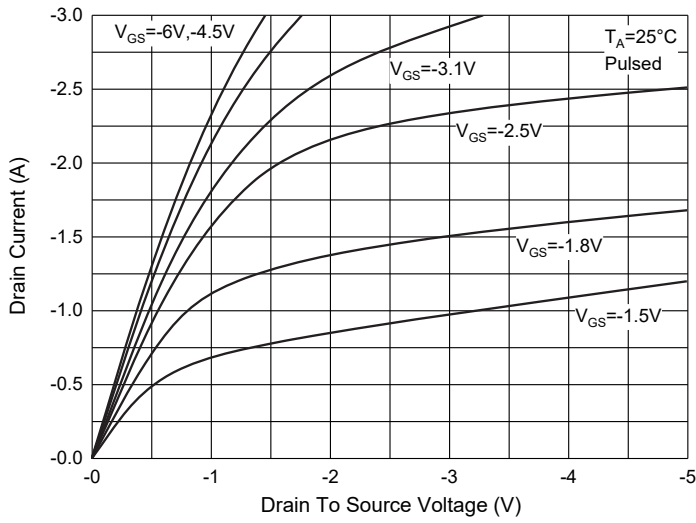


Fig. 2 - Transfer Characteristics

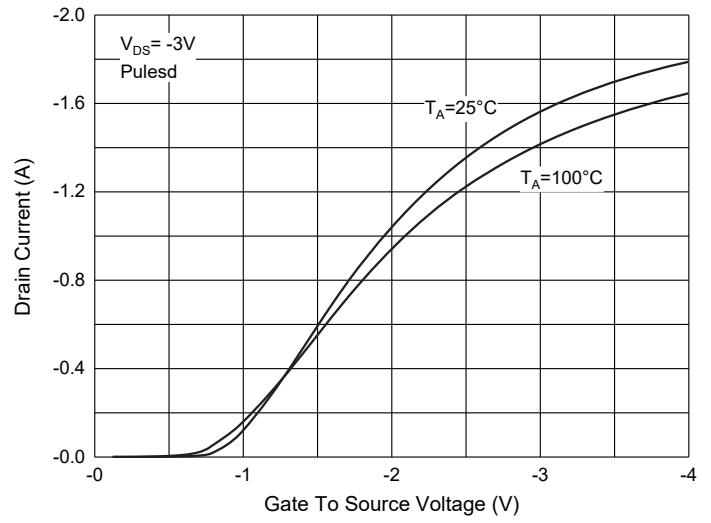


Fig. 3 - $R_{DS(ON)} - I_D$

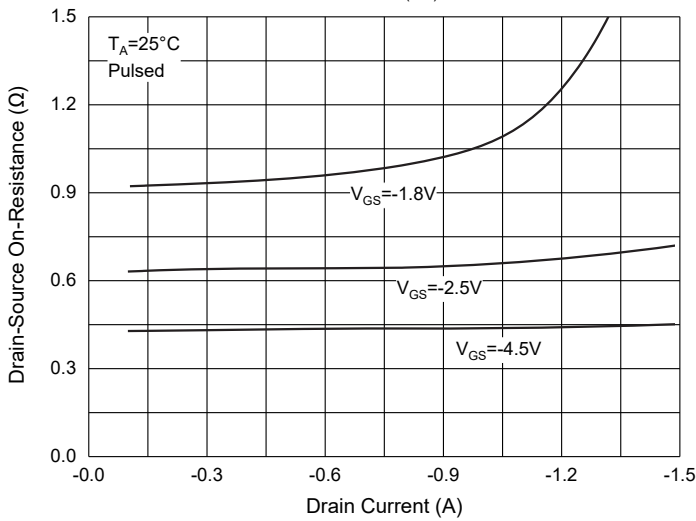


Fig. 4 - $R_{DS(ON)} - V_{GS}$

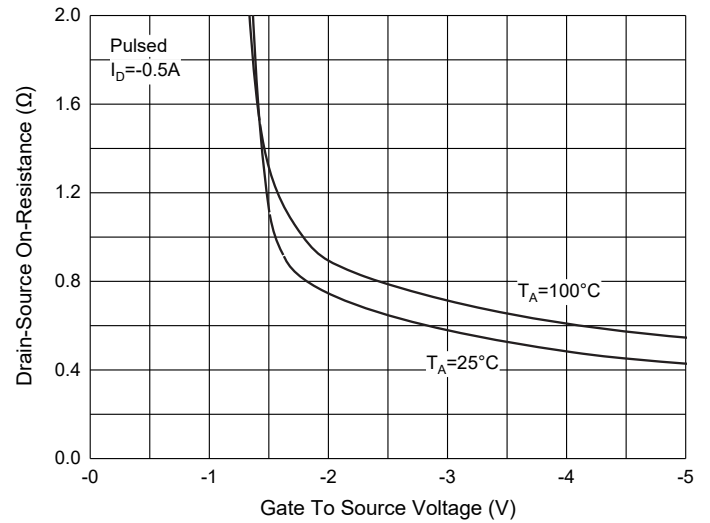


Fig. 5 - $I_S - V_{SD}$

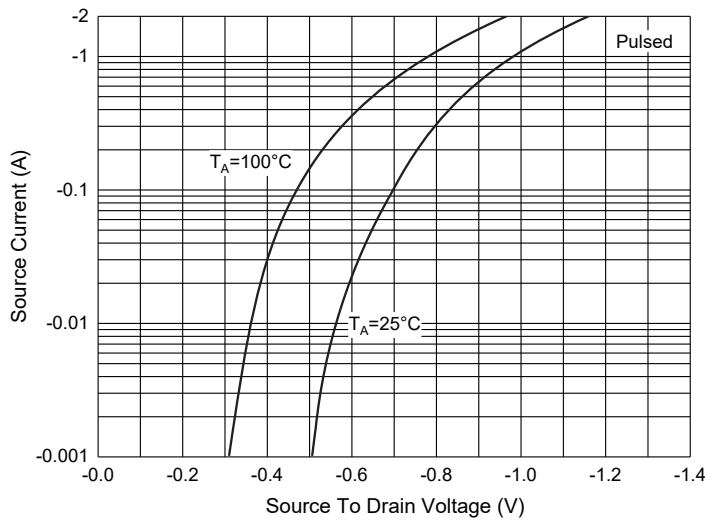
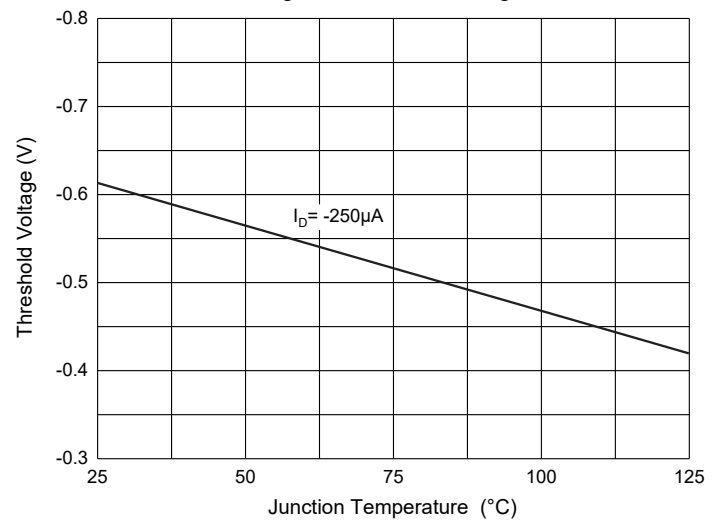


Fig. 6 - Threshold Voltage



Ordering Information

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

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