



# Common Drain N-Channel Enhancement Mode Field Effect Transistor

## Transistor

### ● Features

For a single mosfet

$V_{DS}(V) = 20V, I_D = 6A,$

$R_{DS(ON)} = 22m\Omega @V_{GS} = 4.50V$

$R_{DS(ON)} = 24m\Omega @V_{GS} = 3.85V$

$R_{DS(ON)} = 30m\Omega @V_{GS} = 2.50V$

Advanced trench process technology

High Density Cell Design for Ultra Low On-Resistance

High Power and Current handling capability

Fully Characterized Avalanche Voltage and Current

### ● General Description

Case: SOT23-6L

Case Material: Molded Plastic. UL Flammability Classification

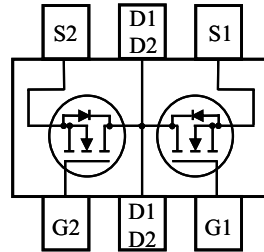
Rating 94V-0

Moisture Sensitivity: Level 1 per J-STD-020C

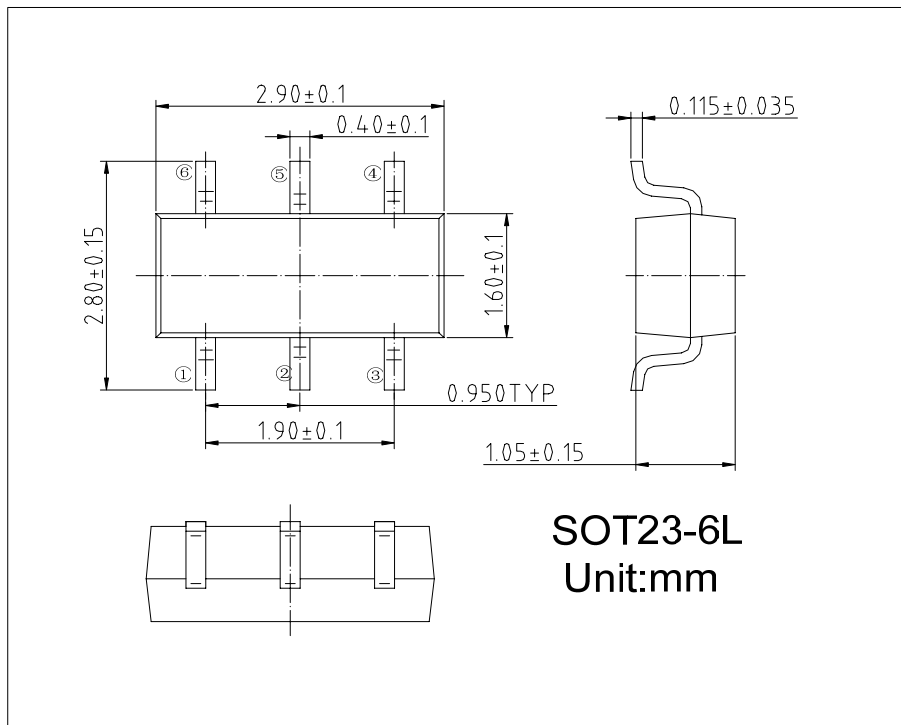
Terminals: Solderable per MIL-STD-202, Method 208

### ● Pin configurations

See Diagram below



### ● Package Information





● **Absolute Maximum Ratings** @  $T_A = 25^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	$V_{DSS}$	20	V
Gate-Source Voltage	$V_{GSS}$	$\pm 12$	
Drain Current (Note 1)	$I_D$	6	A
Total Power Dissipation (Note 1)	$P_D$	450	mW
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

Note: 1. Mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch, for each single die.

● **Electrical Characteristics** @  $T_A = 25^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS (Note 2)</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	20	--	--	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 20V, V_{GS} = 0V$	--	--	1	$\mu\text{A}$
Gate-Body Leakage	$I_{GSS}$	$V_{GS} = \pm 12V, V_{DS} = 0V$	--	--	$\pm 100$	nA
<b>ON CHARACTERISTICS (Note 2)</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	0.6	--	--	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 6A$	--	22	25	m $\Omega$
		$V_{GS} = 3.85V, I_D = 5A$	--	24	27	
		$V_{GS} = 2.5V, I_D = 4A$	--	30	35	
Forward Transconductance	$G_{FS}$	$V_{DS} = 10V, I_D = 6A$	--	5	--	S
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{ISS}$	$V_{DS} = 10V, V_{GS} = 0V$ $F = 1.0\text{MHz}$	--	560	--	pF
Output Capacitance	$C_{OSS}$		--	75	--	
Reverse Transfer Capacitance	$C_{RSS}$		--	70	--	
Total Gate Charge	$Q_G$	$V_{DS} = 10V, I_D = 6A,$ $V_{GS} = 4.5V$	--	5	--	nC
Gate-Source Charge	$Q_{GS}$		--	0.9	--	
Gate-Drain	$Q_{GD}$		--	1.4	--	
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Delay Time	$T_{D(ON)}$	$V_{DD} = 10V, I_D = 1A,$ $V_{GEN} = 4.5V, R_G = 6\Omega$	--	18	--	ns
Turn-Off Delay Time	$T_{D(OFF)}$		--	25	--	

Note: 2. Short duration test pulse used to minimize self-heating effect.



● Typical Performance Characteristics

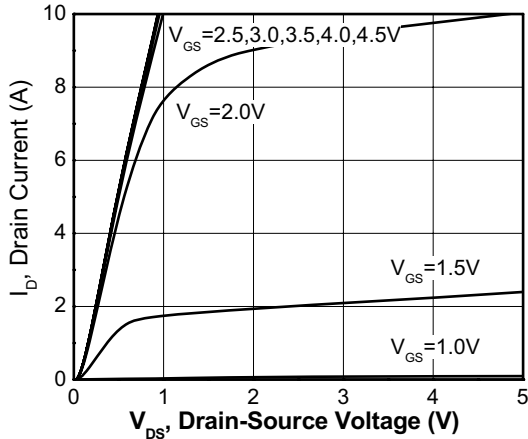


Figure 1. Output Characteristics

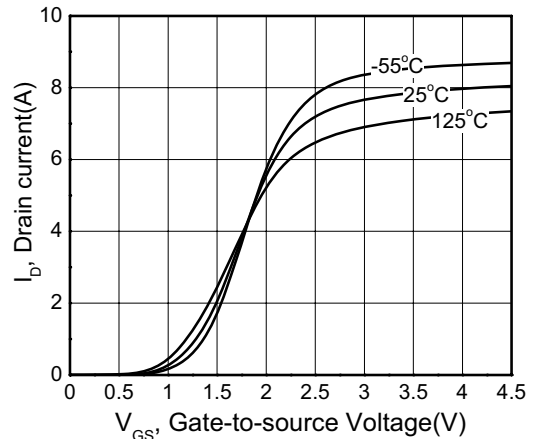


Figure 2. Transfer Characteristics

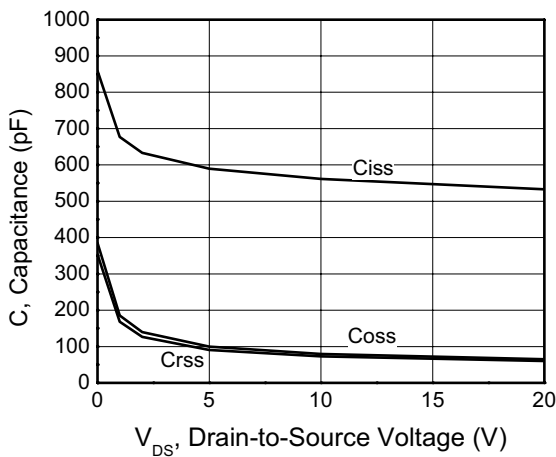


Figure 3. Capacitance

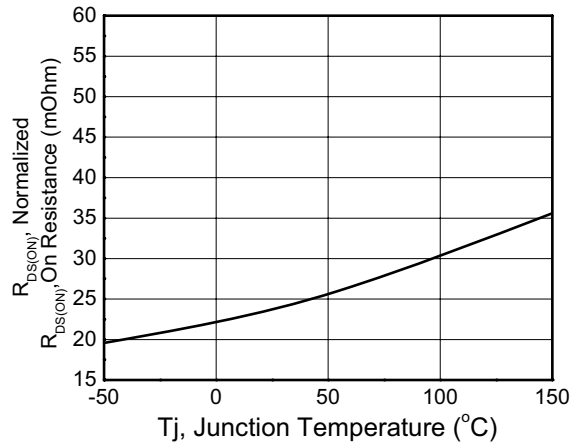


Figure 4. On Resistance Vs. Temperature

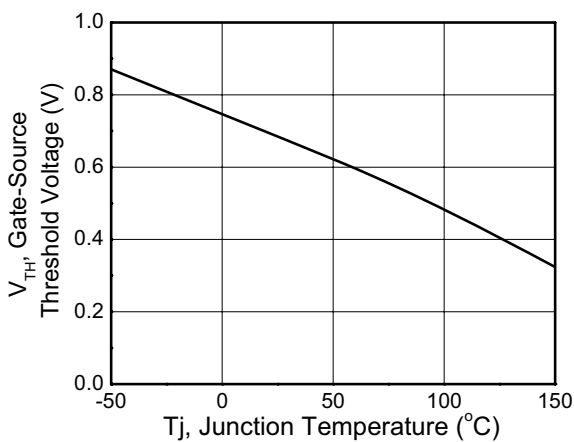


Figure 5. Gate Threshold Vs. Temperature

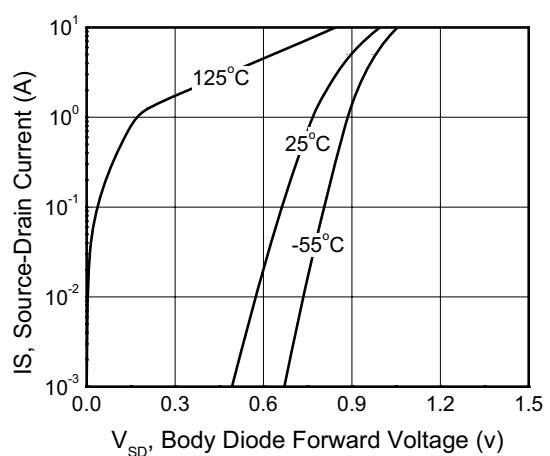


Figure 6. Body Diode Forward Voltage Vs. Source Current



**DISCLAIMER**

HUAXIN SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. HUAXIN DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICIENCE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.