



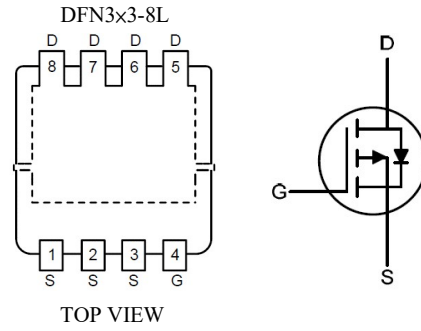
# STM303P080LSH8H

## P-Channel Enhancement Mode Field Effect Transistor

### FEATURES

- $R_{DS(ON)} \leq 8m\Omega @ V_{GS} = -10V$
- $R_{DS(ON)} \leq 13m\Omega @ V_{GS} = -4.5V$
- Suffix "H" indicates Halogen-free parts, ex. STM303P080LSH8H

### PIN CONFIGURATION



Pin	Description
G	Gate
S	Source
D	Drain

### Maximum Ratings ( $T_A = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Unit	
Drain-Source Voltage	$V_{DS}$	-30	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$		
Drain Current	$I_D$	$T_C = 25^\circ C$	-50.0	A
		$T_C = 100^\circ C$	-31.5	
Pulsed Drain Current (Note 1)	$I_{DM}$	-200	A	
Avalanche Current	$I_{AS}$	-29.4	A	
Avalanche Energy (Note 2)	$E_{AS}$	43.4	mJ	
Power Dissipation	$P_D$	39	W	
Thermal Resistance from Junction to Ambient (Note 3)	$R_{\theta JA}$	50	$^\circ C/W$	
Thermal Resistance from Junction to Case	$R_{\theta JC}$	3.2	$^\circ C/W$	
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	- 55 to + 150	$^\circ C$	

Note:

1. The data tested by pulsed, pulse width  $\leq 100\mu s$ , duty cycle  $\leq 2\%$ , Reptitive rating, pulse width limited by junction temperature  $T_{J(MAX)} = 150^\circ C$
2. Limited by  $T_{J(MAX)}$ , starting  $T_J = 25^\circ C$ ,  $L = 0.1mH$ ,  $R_g = 25\Omega$ ,  $I_{AS} = -29.4A$ ,  $V_{GS} = -10V$ .
3. Device mounted on FR-4 substrate PC board, 2oz copper, with 1 inch<sup>2</sup> copper plate in still air. Steady state.



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### Electrical Characteristics ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise specified)

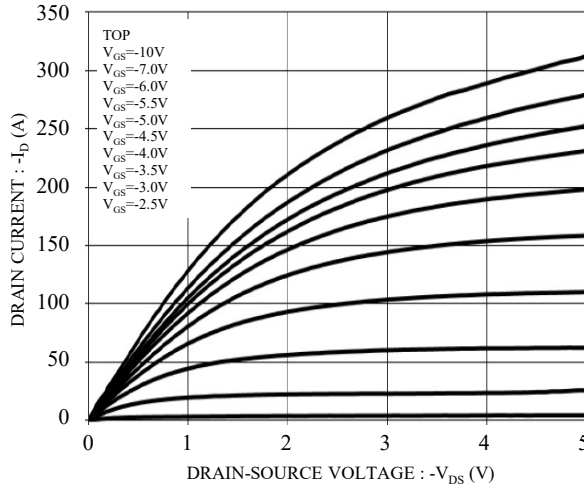
Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$I_D = -250\mu\text{A}$	$V_{(BR)DSS}$	-30	-	-	V
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	$V_{GS(th)}$	-1.2	-	-2.5	V
Zero Gate Voltage Drain Current	$V_{DS} = -30\text{V}$	$I_{DSS}$	-	-	-1	$\mu\text{A}$
Gate Leakage Current	$V_{GS} = \pm 20\text{V}$	$I_{GSS}$	-	-	$\pm 100$	nA
Drain-Source On-Resistance	$V_{GS} = -10\text{V}, I_D = -20\text{A}$	$R_{DS(on)}$	-	6.1	8.0	m $\Omega$
	$V_{GS} = -4.5\text{V}, I_D = -15\text{A}$		-	-	13.0	
Forward Transconductance	$V_{DS} = -5\text{V}, I_D = -10\text{A}$	$g_{FS}$	-	23	-	S
<b>Dynamic</b>						
Gate Resistance	$V_{DS} = 0\text{V}, f = 1\text{MHz}$	$R_g$	-	2	-	$\Omega$
Total Gate Charge	$V_{DS} = -15\text{V}, V_{GS} = -4.5\text{V}, I_D = -20\text{A}$	$Q_g$	-	33	-	nC
			-	70	-	
Gate-Source Charge	$V_{DS} = -15\text{V}, V_{GS} = -10\text{V}, I_D = -20\text{A}$	$Q_{gs}$	-	12	-	nC
Gate-Drain Charge		$Q_{gd}$	-	13	-	
Input Capacitance	$V_{DS} = -15\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$	$C_{iss}$	-	3721	-	pF
Output Capacitance		$C_{oss}$	-	380	-	
Reverse Transfer Capacitance		$C_{rss}$	-	293	-	
Turn on Delay Time		$t_{d(on)}$	-	21	-	
Turn on Rise Time	$V_{DD} = -15\text{V}, I_D = -20\text{A}$	$t_r$	-	54	-	
Turn off Delay Time	$V_{GS} = -10\text{V}, R_G = 3.3\Omega$	$t_{d(off)}$	-	27	-	
Turn off Fall Time	$t_f$	-	7	-		
<b>Drain-Source Body Diode</b>						
Diode Forward Voltage	$V_{GS} = 0\text{V}, I_S = -1\text{A}$	$V_{SD}$	-	-	-1.2	V
Diode Continuous Forward Current	-	$I_S$	-	-	-50	A
Diode Pulse Current		$I_{SM}$	-	-	-200	A
Reverse Recovery Time	$I_S = -20\text{A}, di/dt = 100\text{A}/\mu\text{s}$	$t_{rr}$	-	14	-	ns
Reverse Recovery Charge		$Q_{rr}$	-	8	-	nC



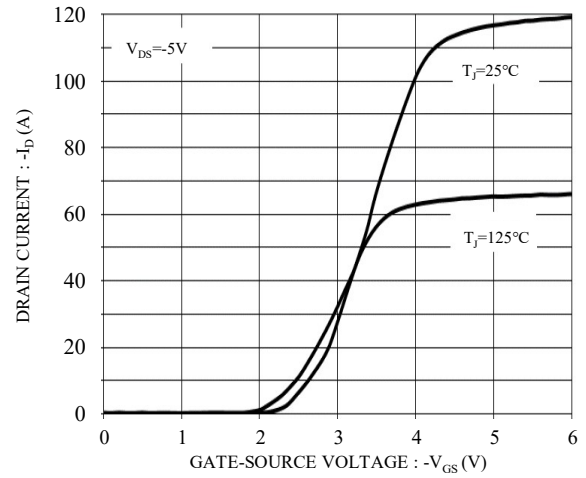
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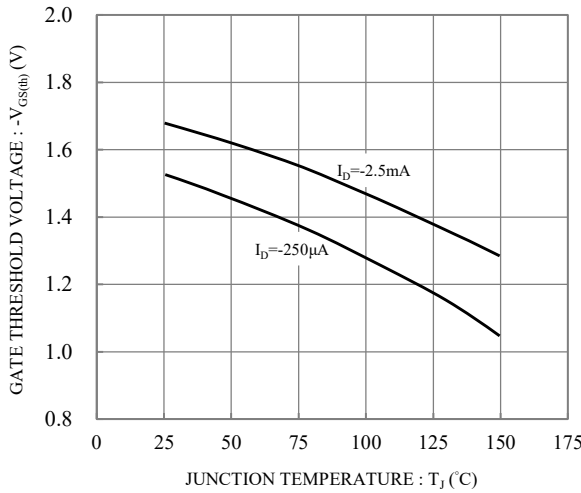
### RATINGS AND CHARACTERISTIC CURVES



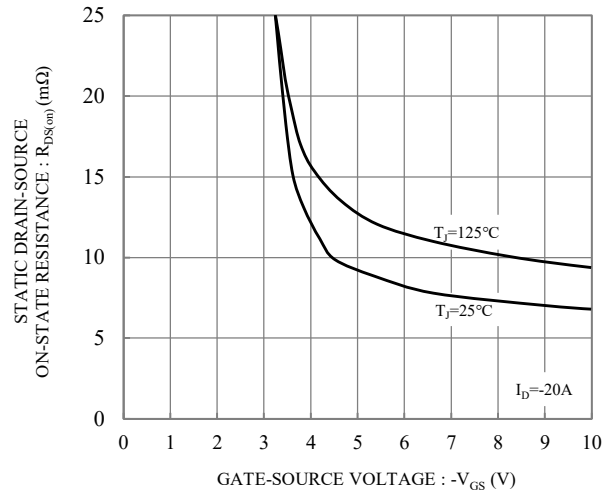
**Fig.1 Typical Output Characteristics**



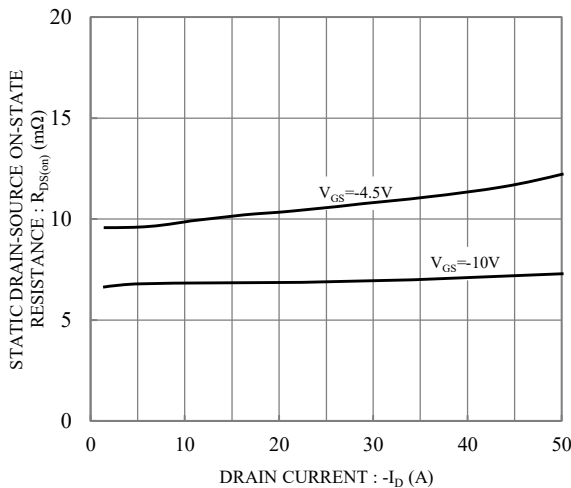
**Fig.2 Typical Transfer Characteristics**



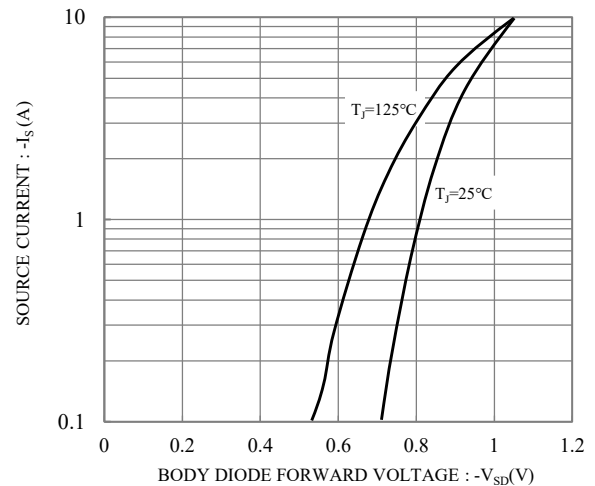
**Fig.3 Gate Threshold Voltage vs. Junction Temperature**



**Fig.4 Static Drain-Source On-State Resistance vs. Gate-Source Voltage**



**Fig.5 Static Drain-Source On-State Resistance vs. Drain Current**

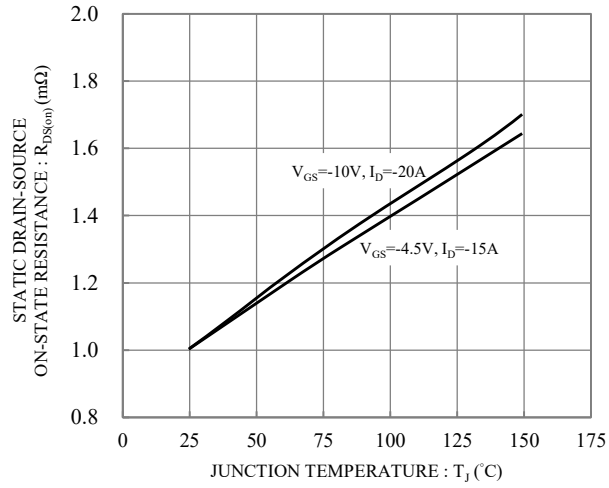


**Fig.6 Body Diode Forward Voltage vs. Source Current**

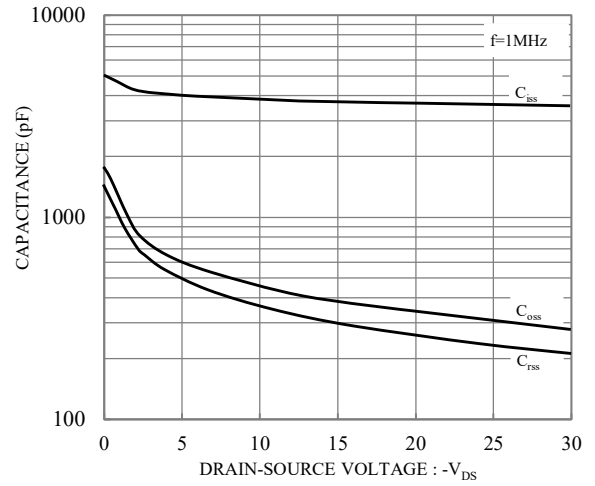


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**Fig.7 Drain-Source On-State Resistance vs Junction Temperature**



**Fig.8 Capacitance vs Drain-Source Voltage**

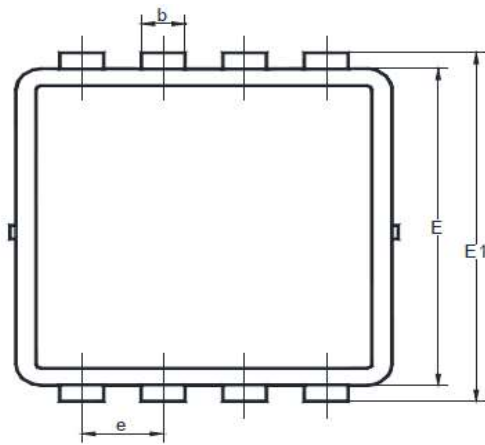


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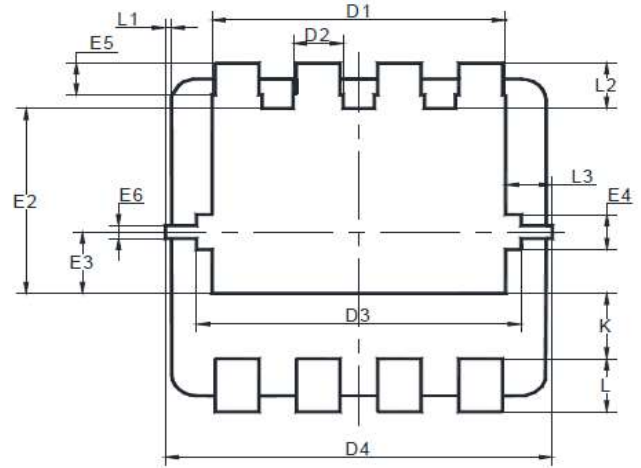
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## Package Dimension

### DFN3×3-8L



Top View



Bottom View



Side View

Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.700	0.900	0.028	0.035
A1	0.000	0.050	0.000	0.002
b	0.240	0.350	0.009	0.014
c	0.100	0.250	0.004	0.010
D1	2.400	2.600	0.094	0.102
D2	0.300	0.500	0.012	0.020
D3	2.500	2.700	0.098	0.106
D4	3.000	3.200	0.118	0.126
E	2.900	3.100	0.114	0.122
E1	3.100	3.300	0.122	0.130
E2	1.650	1.850	0.065	0.073
E3	0.480	0.680	0.019	0.027
E4	0.230	0.430	0.009	0.017
E5	0.200	0.400	0.008	0.016
E6	0.150	0.250	0.006	0.010
e	0.600	0.700	0.024	0.028
K	0.520	0.720	0.020	0.028
L	0.300	0.500	0.012	0.020
L1	0.000	0.100	0.000	0.004
L2	0.330	0.530	0.013	0.021
L3	0.275	0.475	0.011	0.019
θ1	0°	12°	0°	12°