

SOT-89-3L N Channel Enhancement 沟道增强型 MOS Field Effect Transistor 场效应管

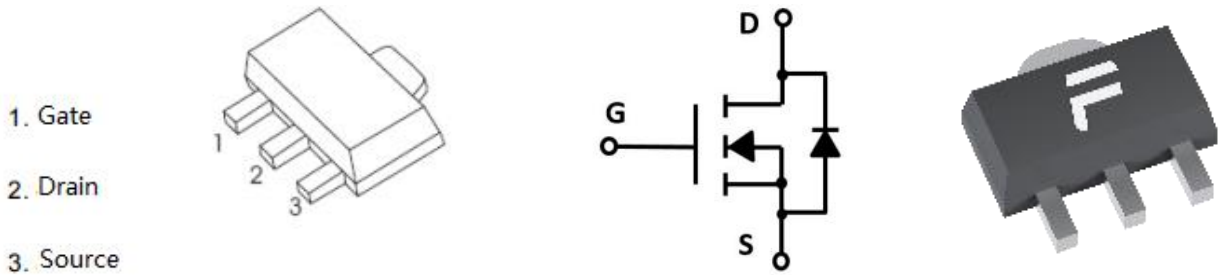
■Features 特点

Low on-resistance 低导通电阻
 $R_{DS(ON)}=21m\Omega(\text{Type})@V_{GS}=10V$
 $R_{DS(ON)}=28m\Omega(\text{Type})@V_{GS}=4.5V$

■Applications 应用

Motor Drive 马达驱动
 DC-DC Conversion 升压转换
 Power Management 电源管理

■Internal Schematic Diagram 内部结构



■Absolute Maximum Ratings 最大额定值

Characteristic 特性参数	Symbol 符号	Rat 额定值	Unit 单位
Drain-Source Voltage 漏极-源极电压	BV_{DSS}	60	V
Gate- Source Voltage 栅极-源极电压	V_{GS}	± 20	V
Drain Current (continuous)漏极电流-连续	I_D (at $T_A = 25^\circ C$ at $T_A = 100^\circ C$)	20 12	A
Drain Current (pulsed)漏极电流-脉冲	I_{DM}	40	A
Total Device Dissipation 总耗散功率	$P_{TOT}(\text{at } T_A = 25^\circ C)$	4	W
Thermal Resistance Junction-Ambient 热阻	$R_{\theta JA}$	30	$^\circ C/W$
Junction/Storage Temperature 结温/储存温度	T_J, T_{stg}	-55~150	$^\circ C$

■ Electrical Characteristics 电特性

 (T_A=25℃ unless otherwise noted 如无特殊说明, 温度为 25℃)

Characteristic 特性参数	Symbol 符号	Min 最小值	Typ 典型值	Max 最大值	Unit 单位
Drain-Source Breakdown Voltage 漏极-源极击穿电压(I _D =250uA, V _{GS} =0V)	BV _{DSS}	60	—	—	V
Gate Threshold Voltage 栅极开启电压(I _D =250uA, V _{GS} =V _{DS})	V _{GS(th)}	1.2	1.7	2.3	V
Zero Gate Voltage Drain Current 零栅压漏极电流(V _{GS} =0V, V _{DS} =60V)	I _{DSS}	—	—	100	nA
Gate Body Leakage 栅极漏电流(V _{GS} =±20V, V _{DS} =0V)	I _{GSS}	—	—	±100	nA
Static Drain-Source On-State Resistance 静态漏源导通电阻(I _D =7A, V _{GS} =10V) (I _D =5A, V _{GS} =4.5V)	R _{DS(ON)}	—	21 28	29 40	mΩ
Diode Forward Voltage Drop 内附二极管正向压降(I _{SD} =10A, V _{GS} =0V)	V _{SD}	—	0.8	1.2	V
Input Capacitance 输入电容 (V _{GS} =0V, V _{DS} =30V, f=1MHz)	C _{ISS}	—	1920	—	pF
Common Source Output Capacitance 共源输出电容(V _{GS} =0V, V _{DS} =30V, f=1MHz)	C _{OSS}	—	150	—	pF
Reverse Transfer Capacitance 反馈电容(V _{GS} =0V, V _{DS} =30V, f=1MHz)	C _{RSS}	—	110	—	pF
Total Gate Charge 栅极电荷密度 (V _{DS} =30V, I _D =7A, V _{GS} =10V)	Q _g	—	50	—	nC
Gate Source Charge 栅源电荷密度 (V _{DS} =30V, I _D =7A, V _{GS} =10V)	Q _{gs}	—	8	—	nC
Gate Drain Charge 栅漏电荷密度 (V _{DS} =30V, I _D =7A, V _{GS} =10V)	Q _{gd}	—	16	—	nC
Turn-ON Delay Time 开启延迟时间 (V _{DS} =30V I _D =7A, R _{GEN} =3Ω, V _{GS} =10V)	t _{d(on)}	—	8	—	ns
Turn-ON Rise Time 开启上升时间 (V _{DS} =30V I _D =7A, R _{GEN} =3Ω, V _{GS} =10V)	t _r	—	5	—	ns
Turn-OFF Delay Time 关断延迟时间 (V _{DS} =30V I _D =7A, R _{GEN} =3Ω, V _{GS} =10V)	t _{d(off)}	—	29	—	ns
Turn-OFF Fall Time 关断下降时间 (V _{DS} =30V I _D =7A, R _{GEN} =3Ω, V _{GS} =10V)	t _f	—	6	—	ns

■ Typical Characteristic Curve 典型特性曲线

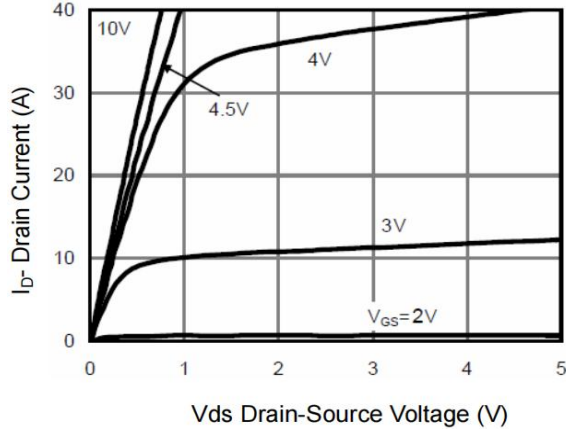


Figure 1: Output Characteristics

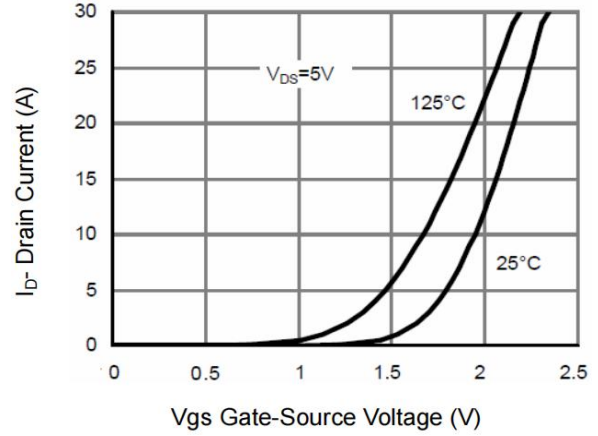


Figure 2: Transfer Characteristics

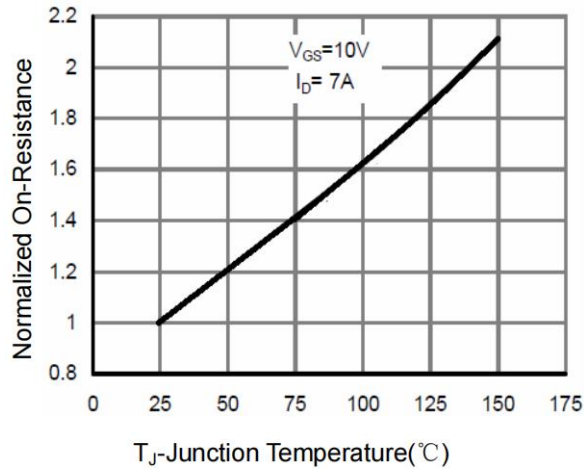


Figure 3: On-Resistance vs. T_J

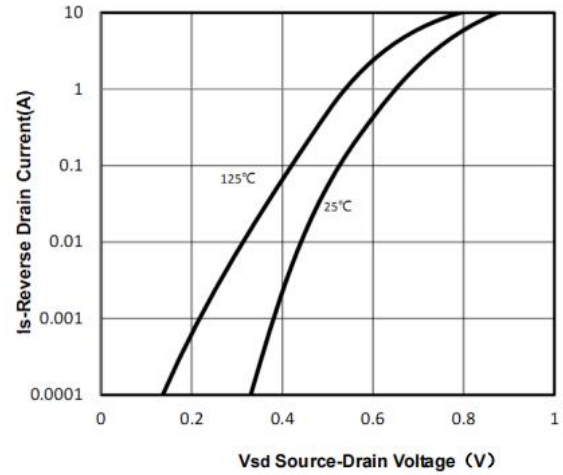


Figure 4: Diode Characteristics

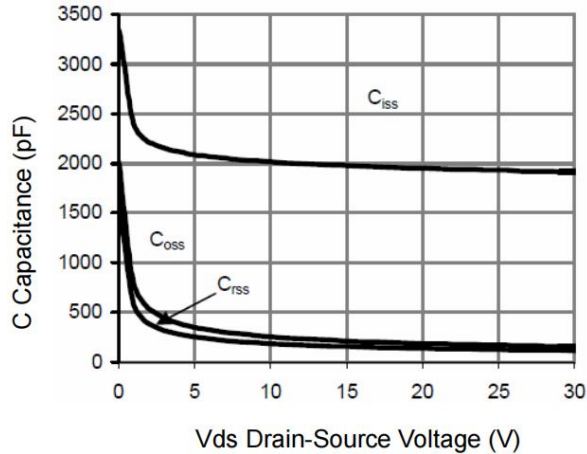


Figure 5: Capacitance Characteristics

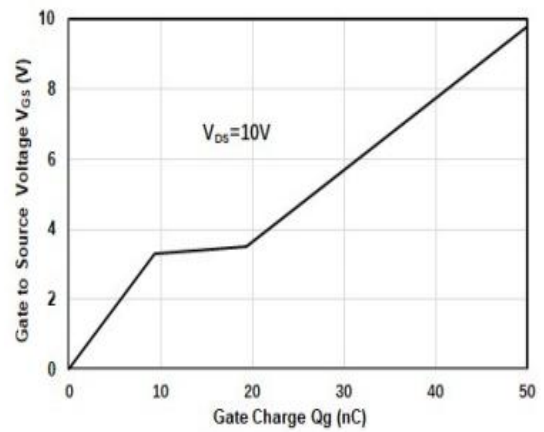


Figure 6: Gate-Charge Characteristics

■ Typical Characteristic Curve 典型特性曲线

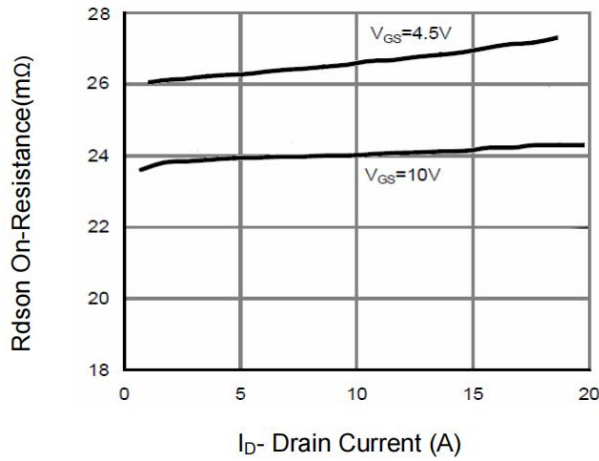


Figure 7: On-Resistance vs. Drain Current

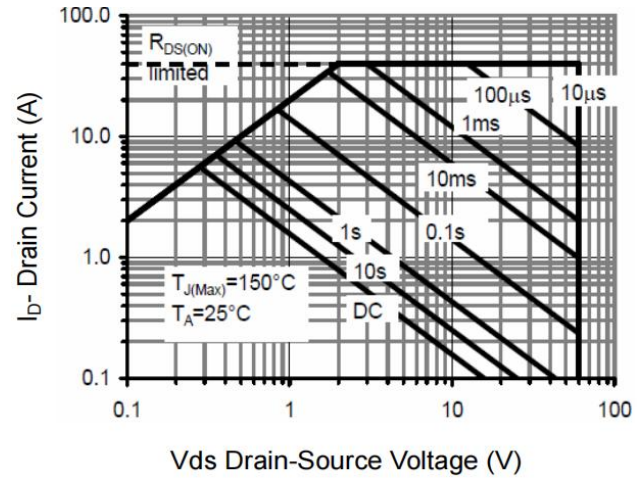


Figure 8: Safe Operating Area

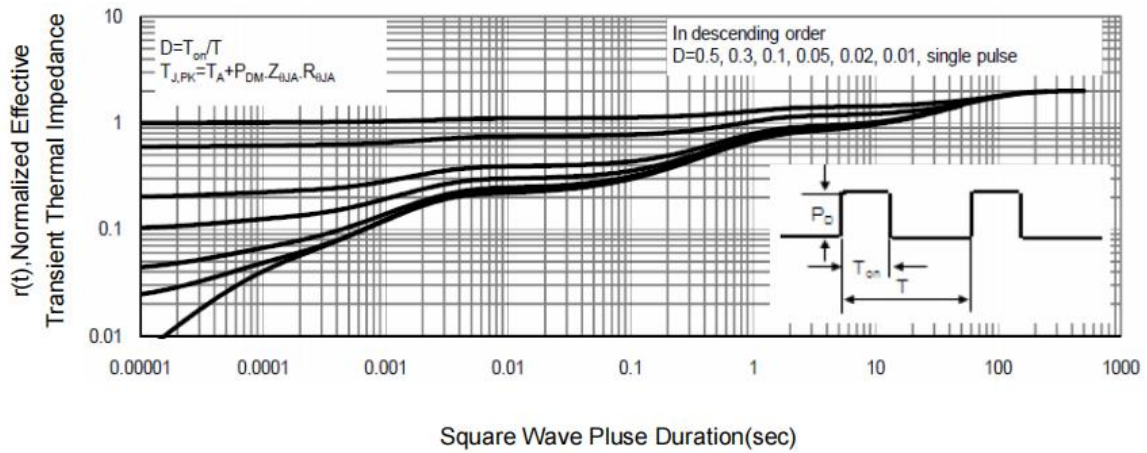
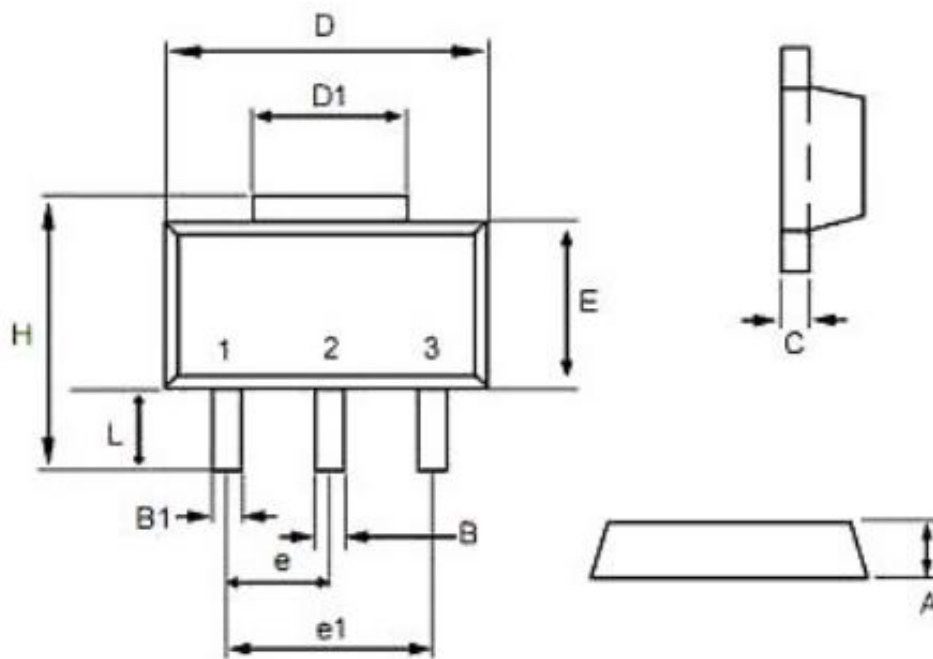


Figure 9: Transient Thermal Response Curve

■ **Dimension 外形封装尺寸**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.40	1.60	0.055	0.063
B	0.40	0.56	0.016	0.022
B1	0.35	0.48	0.014	0.019
C	0.35	0.44	0.014	0.017
D	4.40	4.60	0.173	0.181
D1	1.35	1.83	0.053	0.072
e	1.45	1.55	0.057	0.061
e1	2.95	3.05	0.116	0.120
E	2.29	2.60	0.090	0.102
H	3.75	4.25	0.148	0.167
L	0.80	1.20	0.031	0.047