



SOT-89 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

$R_{DS(ON)}=13m\Omega(\text{Type})@V_{GS}=10V$

$R_{DS(ON)}=16.5m\Omega(\text{Type})@V_{GS}=4.5V$

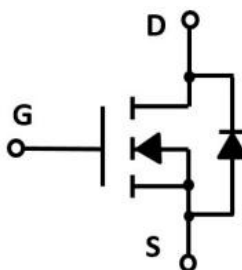
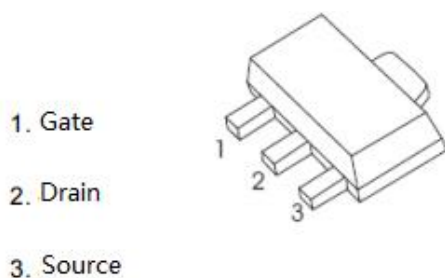
■Applications 应用

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 $T_A = 100^\circ C$)	40 33	A
Drain Current (pulsed)漏极电流-脉冲	I_{DM}	100	A
Total Device Dissipation 总耗散功率	P_{TOT} (at $T_A = 25^\circ C$ at $T_A = 100^\circ C$)	25 13	W
Thermal Resistance Junction-Case 热阻	$R_{\theta JC}$	2.3	$^\circ C/W$
Thermal Resistance Junction-Ambient 热阻	$R_{\theta JA}$	50	$^\circ C/W$
Avalanche Energy Single Pulse 雪崩能量	E_{AS}	49	mJ
Junction/Storage Temperature 结温/储存温度	T_J, T_{stg}	-55~150	$^\circ C$



■ Electrical Characteristics 电特性

($T_A=25^{\circ}\text{C}$ unless otherwise noted 如无特殊说明, 温度为 25°C)

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($I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$)	BV_{DSS}	60	—	—	V
Gate Threshold Voltage 栅极开启电压($I_D=250\mu\text{A}$, $V_{GS}=V_{DS}$)	$V_{GS(th)}$	1.1	1.5	2.2	V
Zero Gate Voltage Drain Current 零栅压漏极电流($V_{GS}=0\text{V}$, $V_{DS}=60\text{V}$)	I_{DSS}	—	—	100	nA
Gate Body Leakage 栅极漏电流($V_{GS}=\pm 20\text{V}$, $V_{DS}=0\text{V}$)	I_{GSS}	—	—	± 100	nA
Static Drain-Source On-State Resistance 静态漏源导通电阻($I_D=20\text{A}$, $V_{GS}=10\text{V}$) ($I_D=10\text{A}$, $V_{GS}=4.5\text{V}$)	$R_{DS(ON)}$	—	13 16.5	18 23	$\text{m}\Omega$
Diode Forward Voltage Drop 内附二极管正向压降($I_{SD}=15\text{A}$, $V_{GS}=0\text{V}$)	V_{SD}	—	0.8	1.2	V
Input Capacitance 输入电容 ($V_{GS}=0\text{V}$, $V_{DS}=30\text{V}$, $f=1\text{MHz}$)	C_{ISS}	—	2585	—	pF
Common Source Output Capacitance 共源输出电容($V_{GS}=0\text{V}$, $V_{DS}=30\text{V}$, $f=1\text{MHz}$)	C_{OSS}	—	150	—	pF
Reverse Transfer Capacitance 反馈电容($V_{GS}=0\text{V}$, $V_{DS}=30\text{V}$, $f=1\text{MHz}$)	C_{RSS}	—	78	—	pF
Total Gate Charge 栅极电荷密度 ($V_{DS}=30\text{V}$, $I_D=20\text{A}$, $V_{GS}=10\text{V}$)	Q_g	—	51	—	nC
Gate Source Charge 栅源电荷密度 ($V_{DS}=30\text{V}$, $I_D=20\text{A}$, $V_{GS}=10\text{V}$)	Q_{gs}	—	10	—	nC
Gate Drain Charge 栅漏电荷密度 ($V_{DS}=30\text{V}$, $I_D=20\text{A}$, $V_{GS}=10\text{V}$)	Q_{gd}	—	10	—	nC
Turn-ON Delay Time 开启延迟时间 ($V_{DS}=30\text{V}$, $I_D=20\text{A}$, $R_{GEN}=3\Omega$, $V_{GS}=10\text{V}$)	$t_{d(on)}$	—	11	—	ns
Turn-ON Rise Time 开启上升时间 ($V_{DS}=30\text{V}$, $I_D=20\text{A}$, $R_{GEN}=3\Omega$, $V_{GS}=10\text{V}$)	t_r	—	25	—	ns
Turn-OFF Delay Time 关断延迟时间 ($V_{DS}=30\text{V}$, $I_D=20\text{A}$, $R_{GEN}=3\Omega$, $V_{GS}=10\text{V}$)	$t_{d(off)}$	—	89	—	ns
Turn-OFF Fall Time 关断下降时间 ($V_{DS}=30\text{V}$, $I_D=20\text{A}$, $R_{GEN}=3\Omega$, $V_{GS}=10\text{V}$)	t_f	—	79	—	ns

■ Typical Characteristic Curve 典型特性曲线

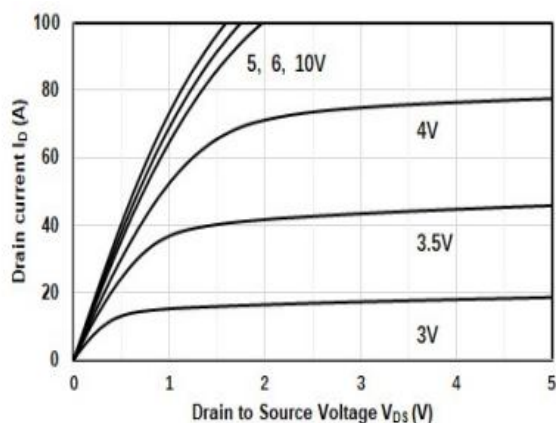


Figure 1: Output Characteristics

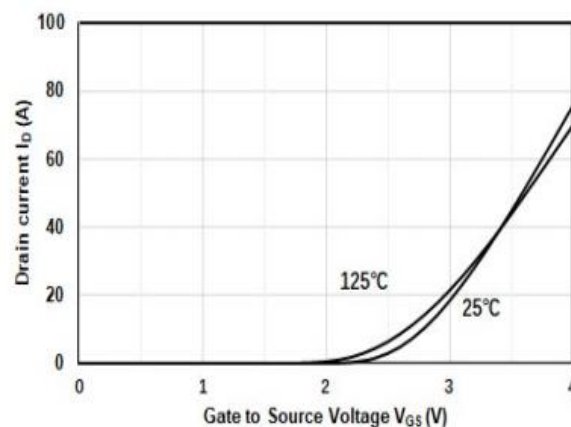


Figure 2: Transfer Characteristics

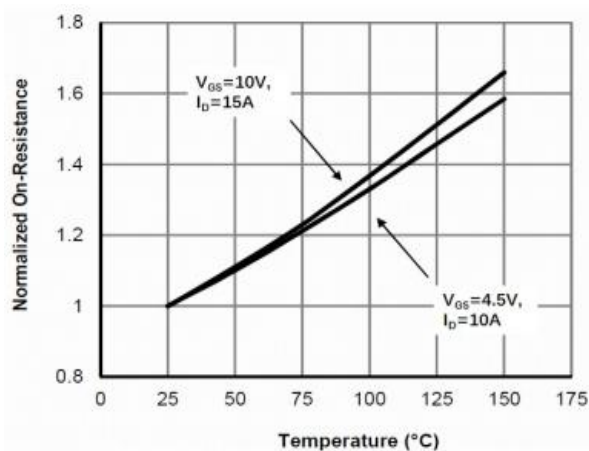


Figure 3: On-Resistance vs. T_J

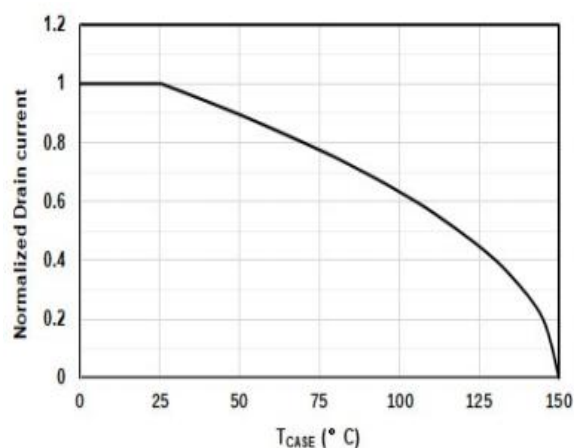


Figure 4: Drain Current vs. Temperature

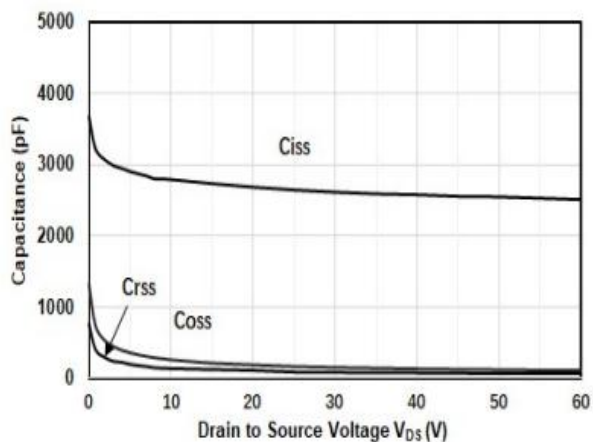


Figure 5: Capacitance Characteristics

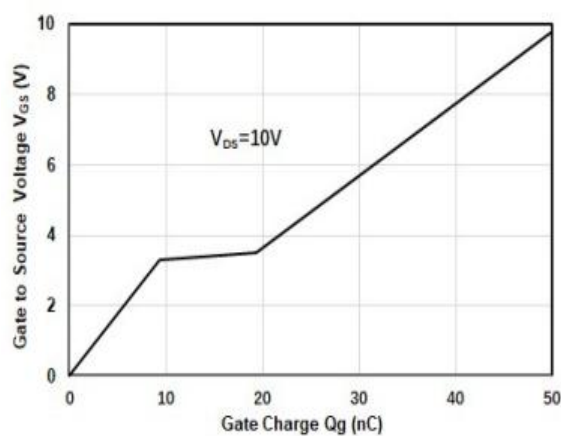


Figure 6: Gate-Charge Characteristics

■ Typical Characteristic Curve 典型特性曲线

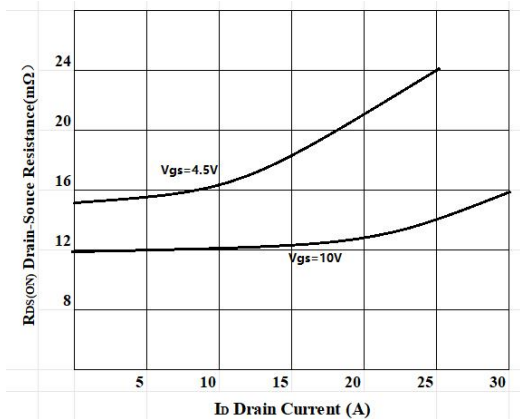


Figure 7: On-Resistance vs. Drain Current

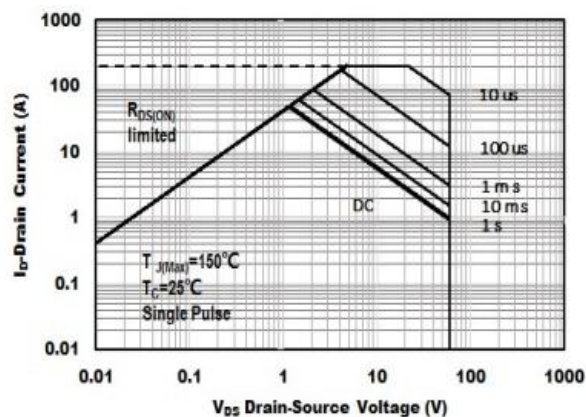


Figure 8: Safe Operating Area

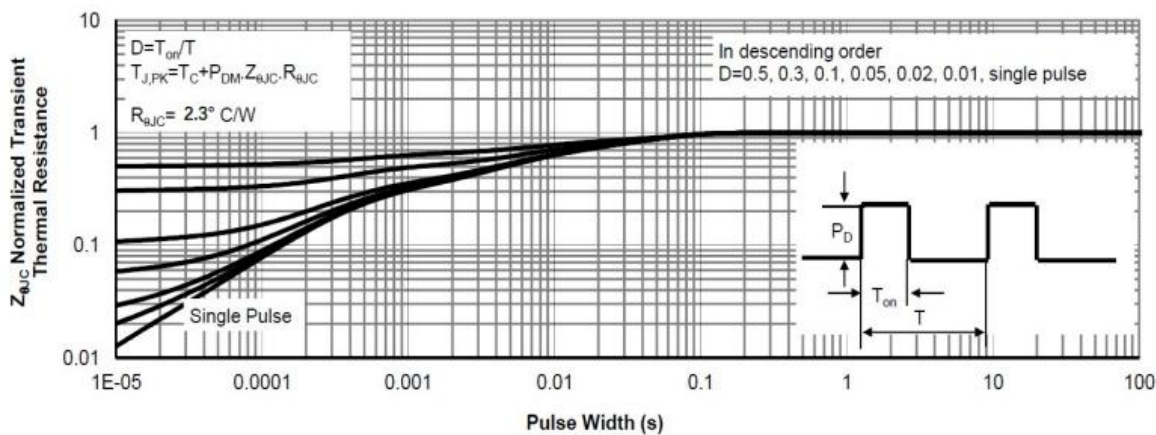
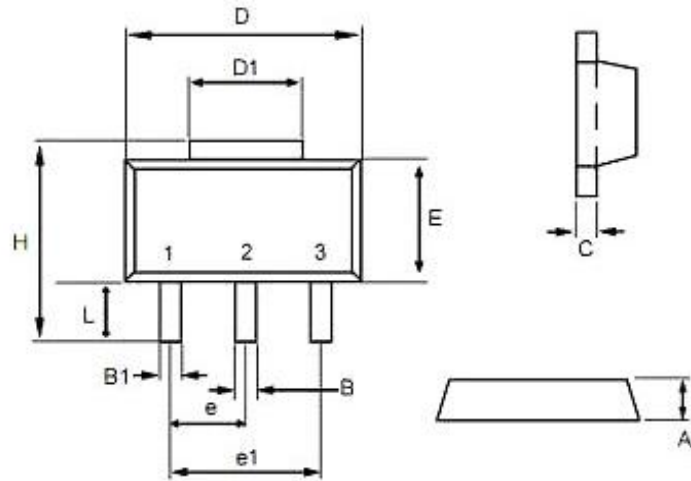


Figure 9: Transient Thermal Response Curve

■ Dimension 外形封装尺寸



Dim	min	max
A	1.40	1.60
B	0.40	0.56
B1	0.35	0.48
C	0.35	0.44
D	4.40	4.60
D1	1.35	1.83
e	1.50 BSC	
e1	3.00 BSC	
E	2.29	2.60
H	3.75	4.25
L	0.80	1.20