

TO-252 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

$R_{DS(ON)}=86m\Omega(\text{Type})@V_{GS}=10V$

$R_{DS(ON)}=96m\Omega(\text{Type})@V_{GS}=4.5V$

■Applications 应用

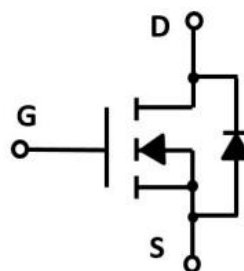
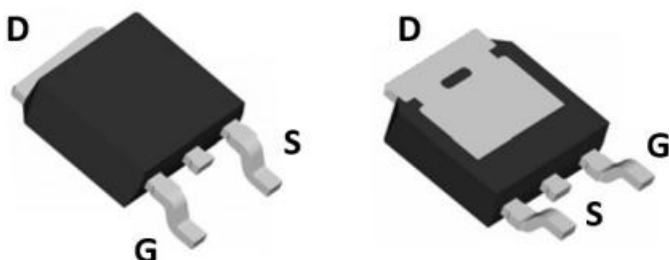
Load switch 负载开关

PWM Application 脉宽调制

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 $T_C = 25^\circ\text{C}$)	15	A
Drain Current (pulsed)漏极电流-脉冲	I_{DM}	58	A
Total Device Dissipation 总耗散功率	$P_{TOT}(\text{at } T_C = 25^\circ\text{C})$	44	W
Thermal Resistance Junction-Case/Ambient 热阻	$R_{\theta JC}$ $R_{\theta JA}$	3.4 50	$^\circ\text{C/W}$
Avalanche Energy Single Pulse 雪崩能量	E_{AS}	6	mJ
Junction/Storage Temperature 结温/储存温度	T_J, T_{stg}	150 $^\circ\text{C}$, -55~150 $^\circ\text{C}$	

■ 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}	100	—	—	V
Gate Threshold Voltage 栅极开启电压(I _D =250uA, V _{GS} =V _{DS})	V _{GS(th)}	1	1.8	2.5	V
Zero Gate Voltage Drain Current 零栅压漏极电流(V _{GS} =0V, V _{DS} =100V)	I _{DSS}	—	—	1	uA
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 =5A, V _{GS} =10V) (I _D =3A, V _{GS} =4.5V)	R _{DS(ON)}	—	86 96	108 125	mΩ
Diode Forward Voltage Drop 内附二极管正向压降(I _{SD} =10A, V _{GS} =0V)	V _{SD}	—	—	1.2	V
Input Capacitance 输入电容 (V _{GS} =0V, V _{DS} =25V, f=1MHz)	C _{ISS}	—	847	—	pF
Common Source Output Capacitance 共源输出电容(V _{GS} =0V, V _{DS} =25V, f=1MHz)	C _{OSS}	—	40	—	pF
Reverse Transfer Capacitance 反馈电容(V _{GS} =0V, V _{DS} =25V, f=1MHz)	C _{RSS}	—	12	—	pF
Total Gate Charge 栅极电荷密度 (V _{DS} =50V, I _D =2A, V _{GS} =10V)	Q _g	—	20	—	nC
Gate Source Charge 栅源电荷密度 (V _{DS} =50V, I _D =2A, V _{GS} =10V)	Q _{gs}	—	2.8	—	nC
Gate Drain Charge 栅漏电荷密度 (V _{DS} =50V, I _D =2A, V _{GS} =10V)	Q _{gd}	—	4	—	nC
Turn-ON Delay Time 开启延迟时间 (V _{DS} =50V I _D =3A, R _{GEN} =1.8Ω, V _{GS} =10V)	t _{d(on)}	—	6	—	ns
Turn-ON Rise Time 开启上升时间 (V _{DS} =50V I _D =3A, R _{GEN} =1.8Ω, V _{GS} =10V)	t _r	—	7	—	ns
Turn-OFF Delay Time 关断延迟时间 (V _{DS} =50V I _D =3A, R _{GEN} =1.8Ω, V _{GS} =10V)	t _{d(off)}	—	21	—	ns
Turn-OFF Fall Time 关断下降时间 (V _{DS} =50V I _D =3A, R _{GEN} =1.8Ω, V _{GS} =10V)	t _f	—	3	—	ns

■ Typical Characteristic Curve 典型特性曲线

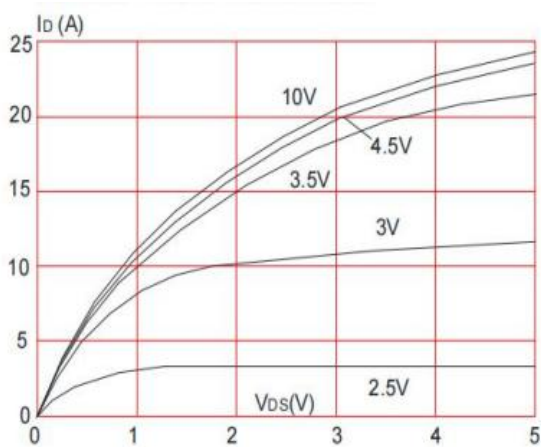


Figure 1: Output Characteristics

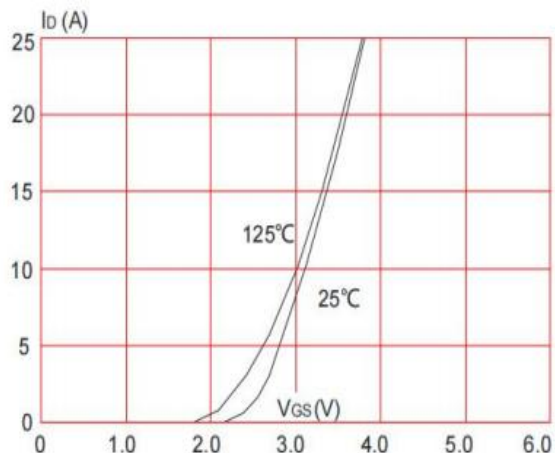


Figure 2: Transfer Characteristics

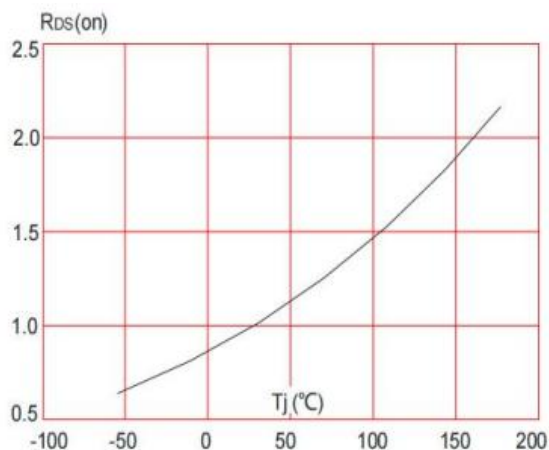


Figure 3: On-Resistance vs. T_J

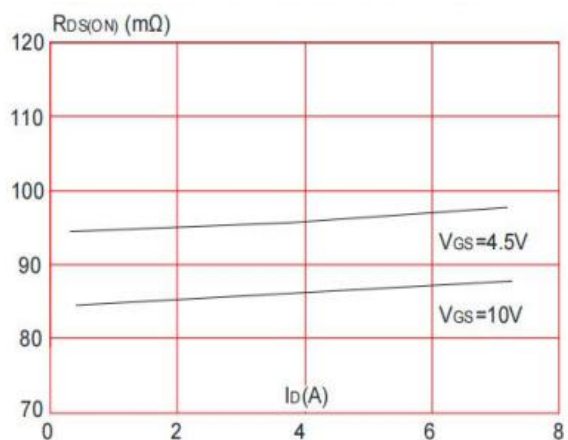


Figure 4: On-Resistance vs. Drain Current

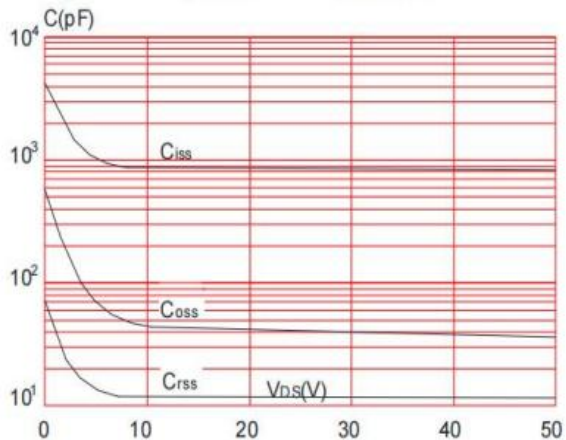


Figure 5: Capacitance Characteristics

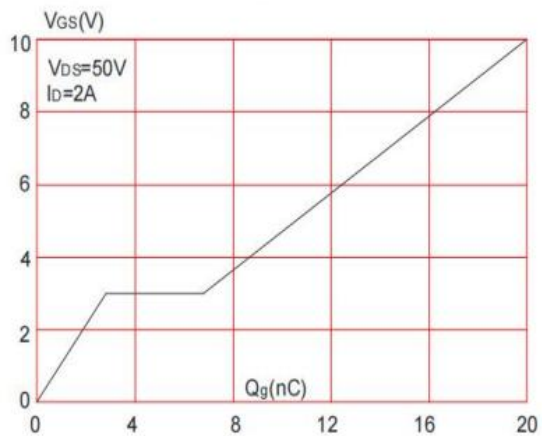


Figure 6: Gate-Charge Characteristics

■ Typical Characteristic Curve 典型特性曲线

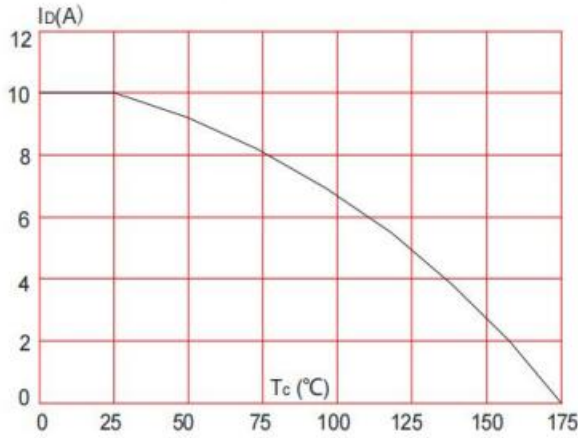


Figure 7: Drain Current Characteristics

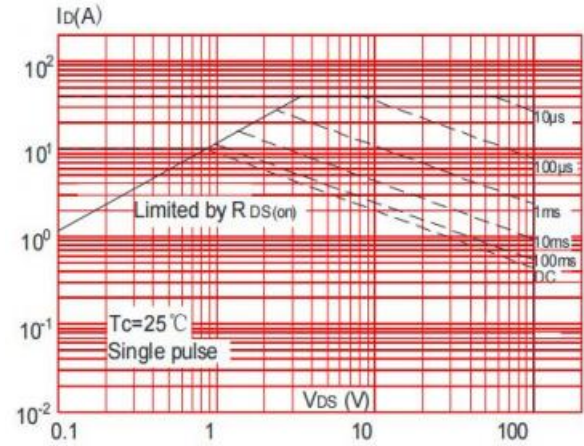


Figure 8: Safe Operating Area

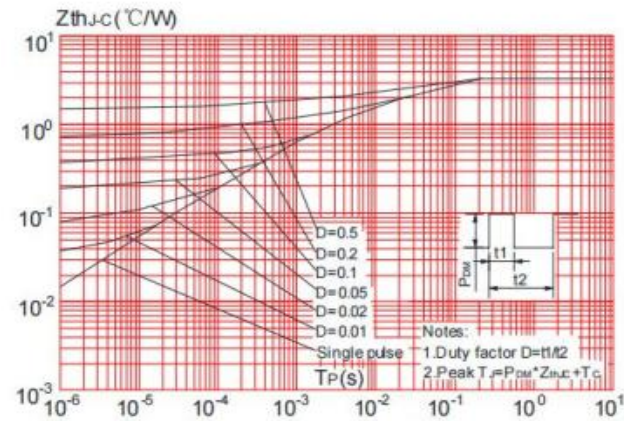
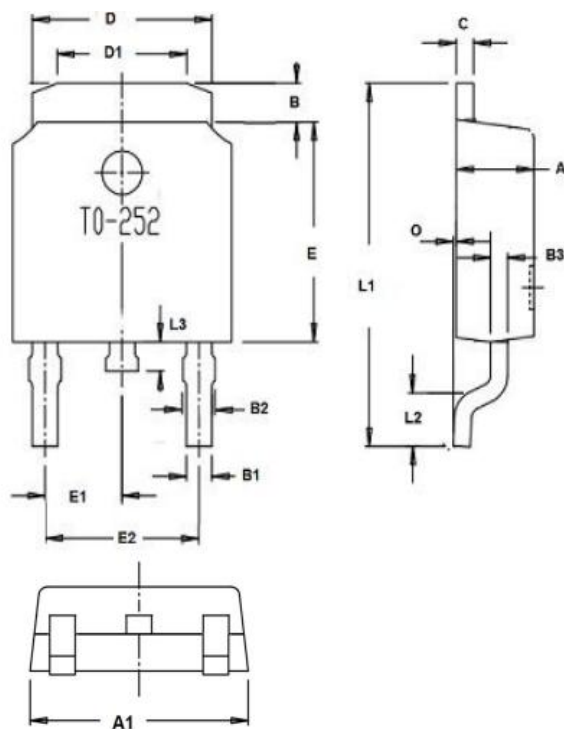


Figure 9: Transient Thermal Response Curve

■ **Dimension 外形封装尺寸**



Dim.	Min.	Max.
A	2.1	2.5
A1	6.3	6.9
B	0.95	1.55
B1	0.6	0.8
B2	0.75	0.95
B3		
C	Typ0.5	
D	5.3	5.5
D1	3.65	4.05
E	5.8	6.4
E1	Typ2.3	
E2	Typ4.6	
O	0	0.15
L1	9	11
L2	Typ1.5	
L3	0.7	1
All Dimensions in millimeter		