

TO-252 P 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

$R_{DS(ON)}=5m\Omega(\text{Type})@V_{GS}=-10V$

$R_{DS(ON)}=8.3m\Omega(\text{Type})@V_{GS}=-4.5V$

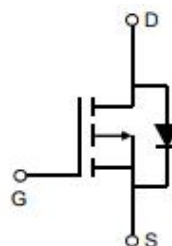
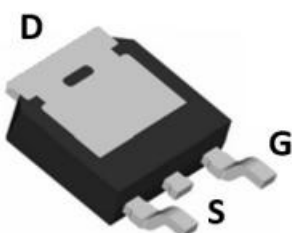
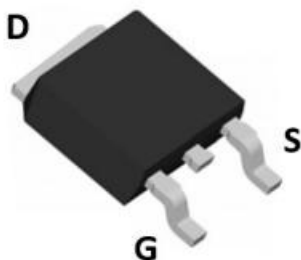
■Applications 应用

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}	-30	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 $T_C = 25^\circ\text{C}$)	-100	A
Drain Current (pulsed)漏极电流-脉冲	I_{DM}	-400	A
Total Device Dissipation 总耗散功率	$P_D(\text{at } T_C = 25^\circ\text{C})$	78	W
Thermal Resistance Junction-Case 热阻	$R_{\theta JC}$	1.2	$^\circ\text{C/W}$
Thermal Resistance Junction-Ambient 热阻	$R_{\theta JA}$	41	$^\circ\text{C/W}$
Avalanche Energy Single Pulse 雪崩能量	E_{AS}	180	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}	-30	—	—	V
Gate Threshold Voltage 栅极开启电压(I _D = -250uA, V _{GS} = V _{DS})	V _{GS(th)}	-1.1	-1.6	-2.2	V
Zero Gate Voltage Drain Current 零栅压漏极电流(V _{GS} =0V, V _{DS} = -30V)	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 = -20A, V _{GS} = -10V) (I _D = -15A, V _{GS} = -4.5V)	R _{DS(ON)}	—	5 8.3	6.5 10	mΩ
Diode Forward Voltage Drop 内附二极管正向压降(I _{SD} = -30, V _{GS} =0V)	V _{SD}	—	—	-1.2	V
Input Capacitance 输入电容 (V _{GS} =0V, V _{DS} = -15V, f=1MHz)	C _{ISS}	—	3500	—	pF
Common Source Output Capacitance 共源输出电容(V _{GS} =0V, V _{DS} = -15V, f=1MHz)	C _{OSS}	—	520	—	pF
Reverse Transfer Capacitance 反馈电容 (V _{GS} =0V, V _{DS} = -15V, f=1MHz)	C _{RSS}	—	456	—	pF
Total Gate Charge 栅极电荷密度 (V _{DS} = -15V, I _D = -10A, V _{GS} = -10V)	Q _g	—	63	—	nC
Gate Source Charge 栅源电荷密度 (V _{DS} = -15V, I _D = -10A, V _{GS} = -10V)	Q _{gs}	—	9.6	—	nC
Gate Drain Charge 栅漏电荷密度 (V _{DS} = -15V, I _D = -10A, V _{GS} = -10V)	Q _{gd}	—	14	—	nC
Turn-ON Delay Time 开启延迟时间 (V _{DS} = -15V I _D = -10A, R _{GEN} =2.7 Ω, V _{GS} = -10V)	t _{d(on)}	—	6.9	—	ns
Turn-ON Rise Time 开启上升时间 (V _{DS} = -15V I _D = -10A, R _{GEN} =2.7 Ω, V _{GS} = -10V)	t _r	—	5.8	—	ns
Turn-OFF Delay Time 关断延迟时间 (V _{DS} = -15V I _D = -10A, R _{GEN} =2.7 Ω, V _{GS} = -10V)	t _{d(off)}	—	115	—	ns
Turn-OFF Fall Time 关断下降时间 (V _{DS} = -15V I _D = -10A, R _{GEN} =2.7 Ω, V _{GS} = -10V)	t _f	—	78	—	ns

■ Typical Characteristic Curve 典型特性曲线

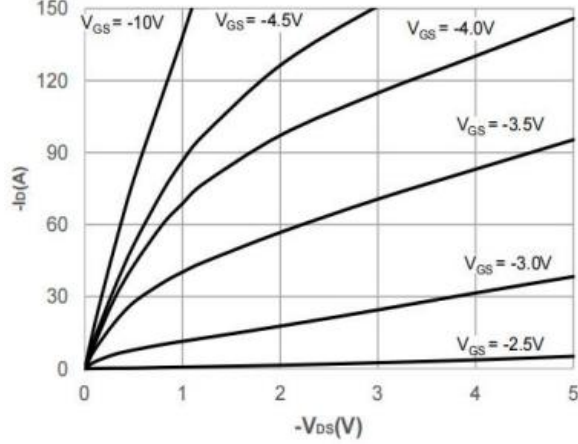


Figure 1: Output Characteristics

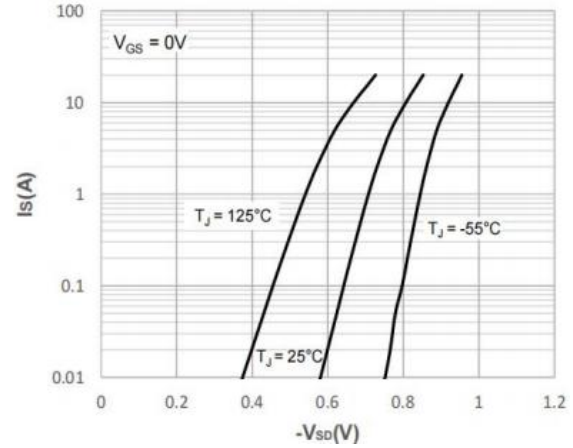


Figure 2: Diode Characteristics

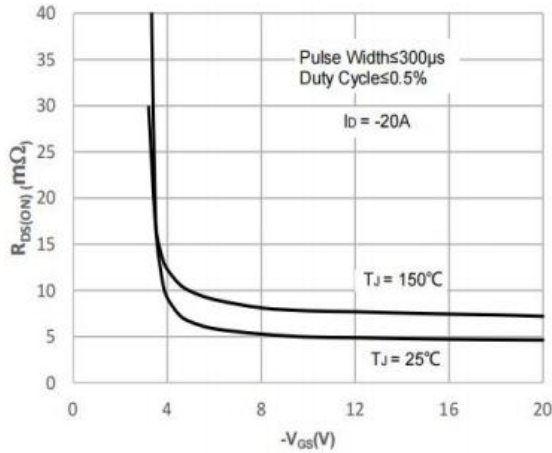


Figure 3: On-Resistance vs. V_{GS}

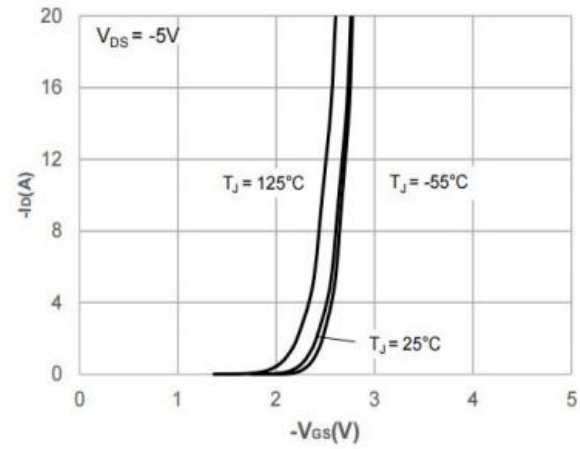


Figure 4: Transfer Characteristics

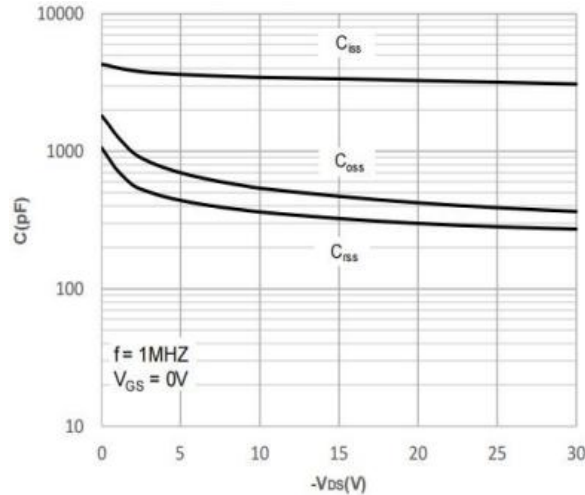


Figure 5: Capacitance Characteristics

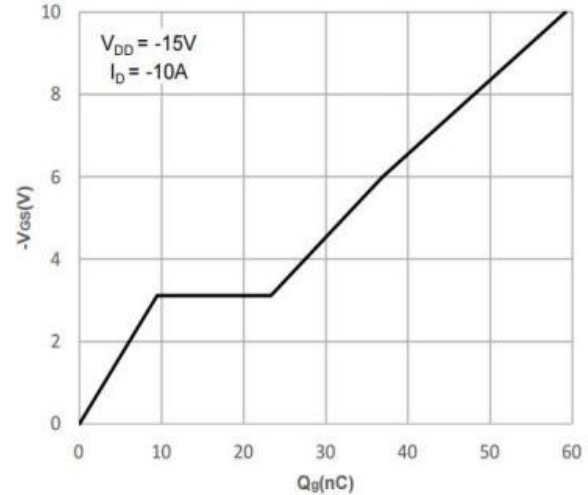


Figure 6: Gate-Charge Characteristics

■ Typical Characteristic Curve 典型特性曲线

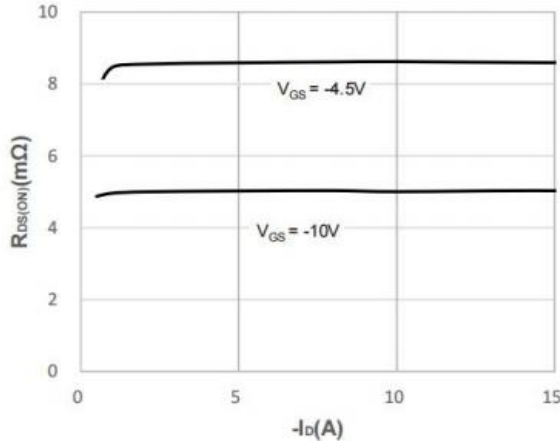


Figure 7: On-Resistance vs. Drain Current

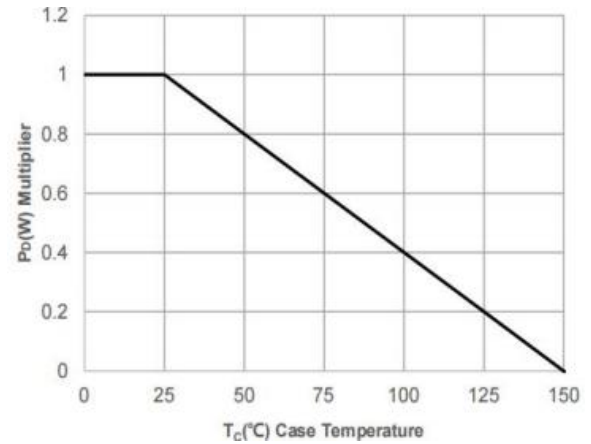


Figure 8: Power De-rating

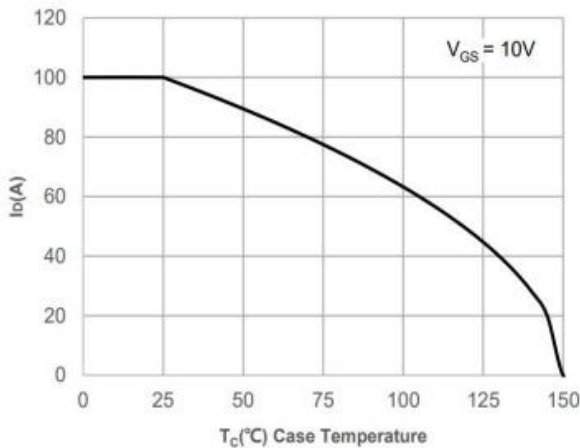


Figure 9: Current De-rating

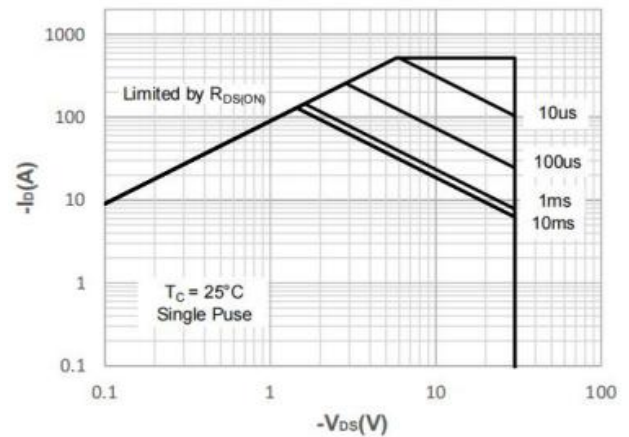


Figure 10: Safe Operating Area

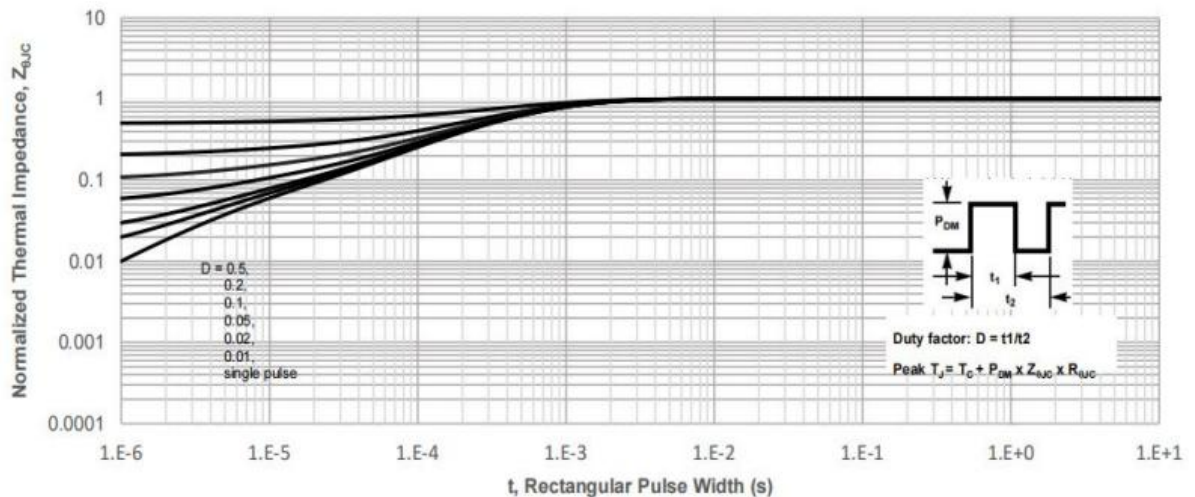
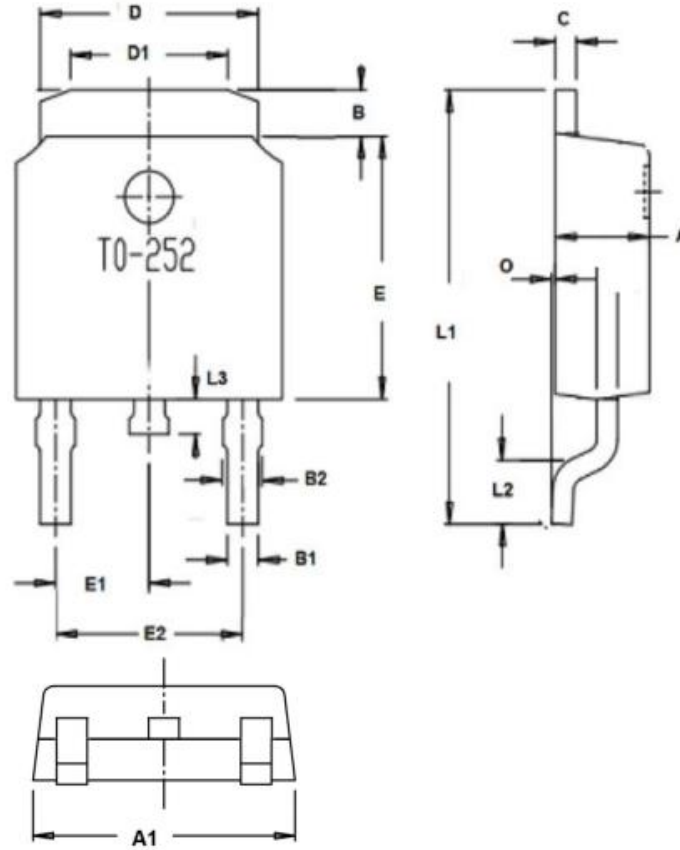


Figure 11: Transient Thermal Response Curve

■ Package 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
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		