

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

$R_{DS(ON)}=8m\Omega(\text{Type})@V_{GS}=10V$

$R_{DS(ON)}=10m\Omega(\text{Type})@V_{GS}=4.5V$

■Applications 应用

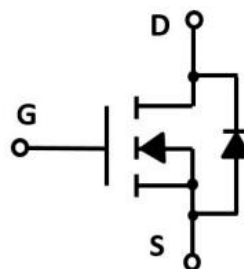
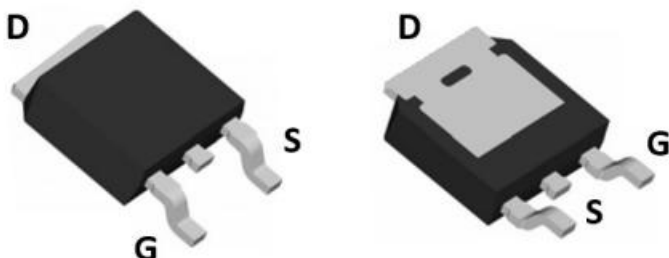
Load switch 负载开关

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}	40	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 $T_C = 25^\circ C$)	60	A
Drain Current (pulsed)漏极电流-脉冲	I_{DM}	240	A
Total Device Dissipation 总耗散功率	$P_D(\text{at } T_C = 25^\circ C)$	35	W
Thermal Resistance Junction-Case 热阻	$R_{\theta JC}$	3.6	$^\circ C/W$
Thermal Resistance Junction-Ambient 热阻	$R_{\theta JA}$	37	$^\circ C/W$
Avalanche Energy Single Pulse 雪崩能量	E_{AS}	48	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℃ 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}	40	—	—	V
Gate Threshold Voltage 栅极开启电压(I _D =250uA, V _{GS} =V _{DS})	V _{GS(th)}	1	1.6	2.5	V
Zero Gate Voltage Drain Current 零栅压漏极电流(V _{GS} =0V, V _{DS} =40V)	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 =30A, V _{GS} =10V) (I _D =20A, V _{GS} =4.5V)	R _{DS(ON)}	—	8 10	10 13	mΩ
Diode Forward Voltage Drop 内附二极管正向压降(I _{SD} =30A, V _{GS} =0V)	V _{SD}	—	—	1.2	V
Input Capacitance 输入电容 (V _{GS} =0V, V _{DS} =20V, f=1MHz)	C _{ISS}	—	1910	—	pF
Common Source Output Capacitance 共源输出电容(V _{GS} =0V, V _{DS} =20V, f=1MHz)	C _{OSS}	—	130	—	pF
Reverse Transfer Capacitance 反馈电容 (V _{GS} =0V, V _{DS} =20V, f=1MHz)	C _{RSS}	—	105	—	pF
Total Gate Charge 栅极电荷密度 (V _{DS} =20V, I _D =20A, V _{GS} =10V)	Q _g	—	37	—	nC
Gate Source Charge 栅源电荷密度 (V _{DS} =20V, I _D =20A, V _{GS} =10V)	Q _{gs}	—	8	—	nC
Gate Drain Charge 栅漏电荷密度 (V _{DS} =20V, I _D =20A, V _{GS} =10V)	Q _{gd}	—	7	—	nC
Turn-ON Delay Time 开启延迟时间 (V _{DS} =20V, I _D =20A, R _{GEN} =3Ω, V _{GS} =10V)	t _{d(on)}	—	8	—	ns
Turn-ON Rise Time 开启上升时间 (V _{DS} =20V, I _D =20A, R _{GEN} =3Ω, V _{GS} =10V)	t _r	—	28	—	ns
Turn-OFF Delay Time 关断延迟时间 (V _{DS} =20V, I _D =20A, R _{GEN} =3Ω, V _{GS} =10V)	t _{d(off)}	—	36	—	ns
Turn-OFF Fall Time 关断下降时间 (V _{DS} =20V, I _D =20A, R _{GEN} =3Ω, V _{GS} =10V)	t _f	—	6	—	ns

■ Typical Characteristic Curve 典型特性曲线

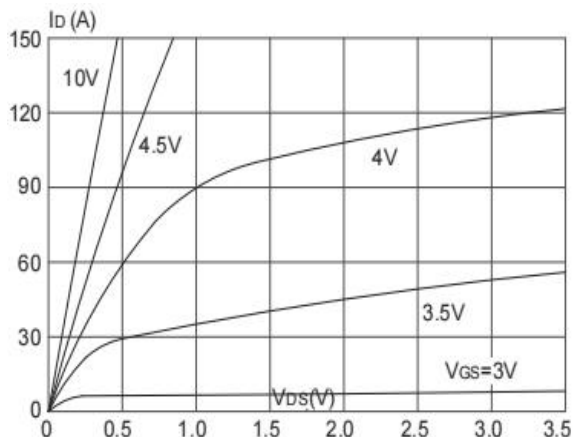


Figure 1: Output Characteristics

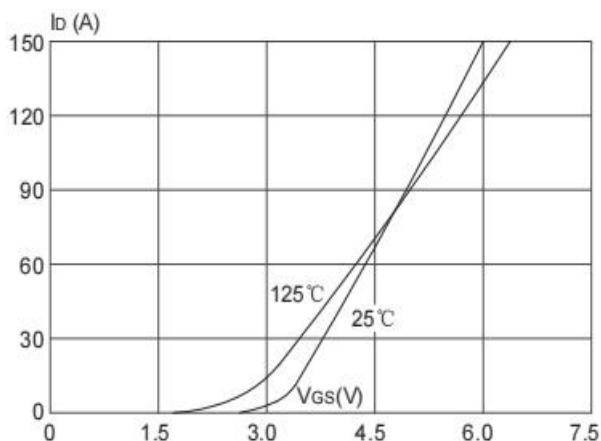


Figure 2: Transfer Characteristics

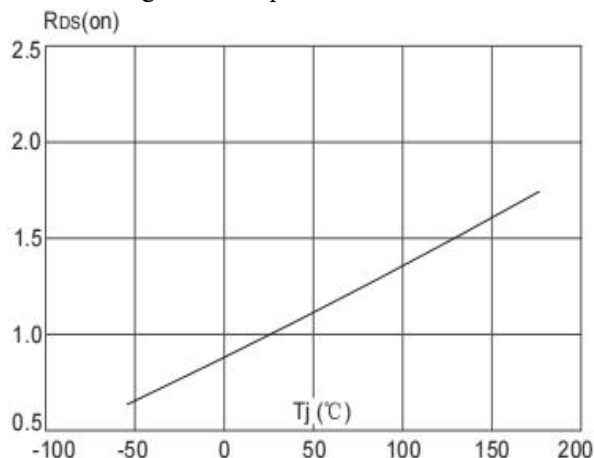


Figure 3: On-Resistance vs. T_J

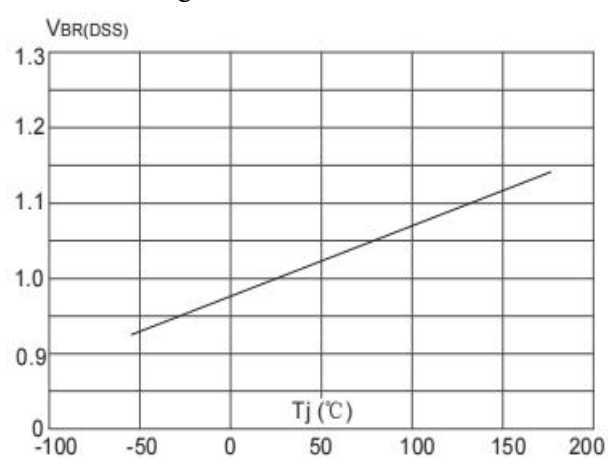


Figure 4: Breakdown Voltage vs. T_J

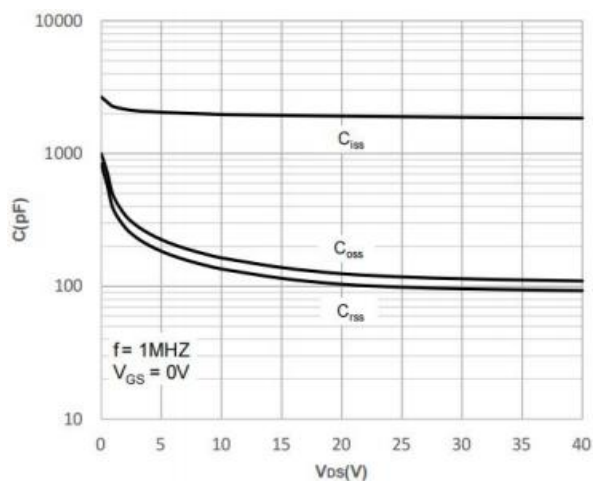


Figure 5: Capacitance Characteristics

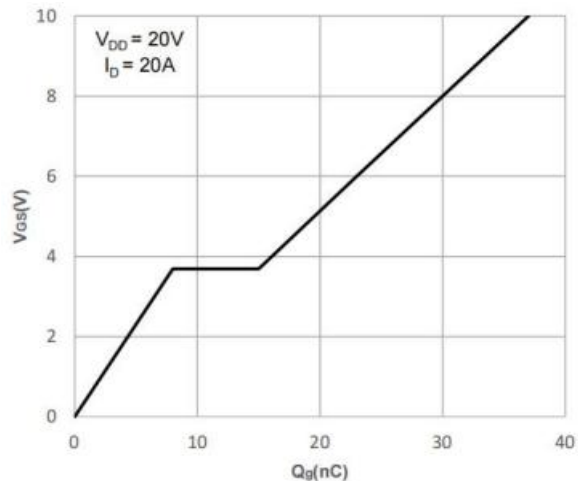


Figure 6: Gate-Charge Characteristics

■ Typical Characteristic Curve 典型特性曲线

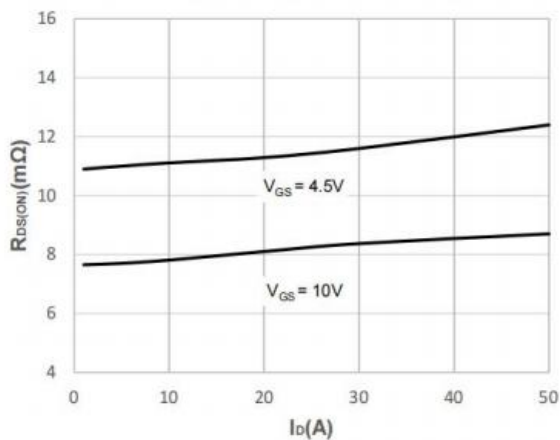


Figure 7: On-Resistance vs. Drain Current

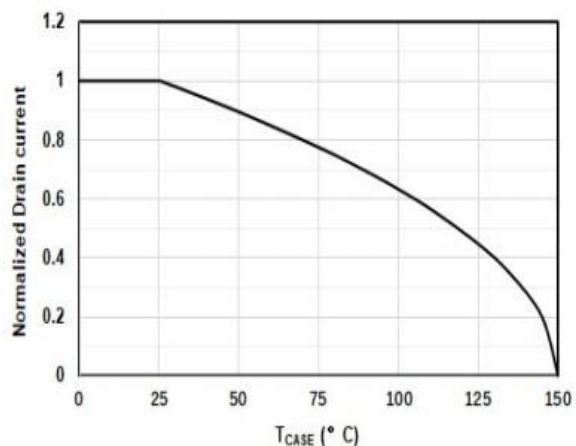


Figure 8: Drain Current vs. T_C

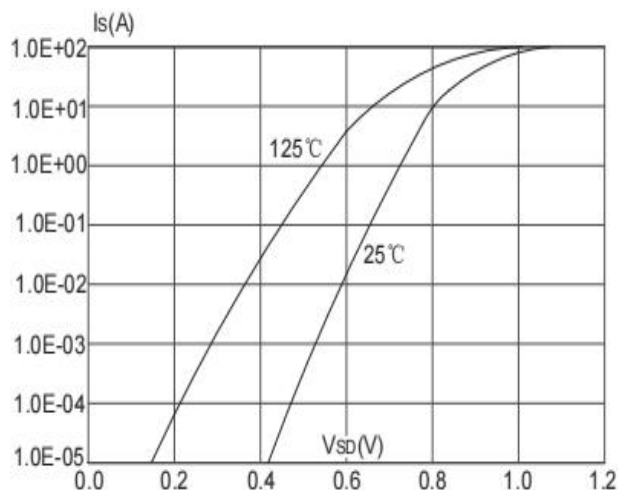


Figure 9: Diode Characteristics

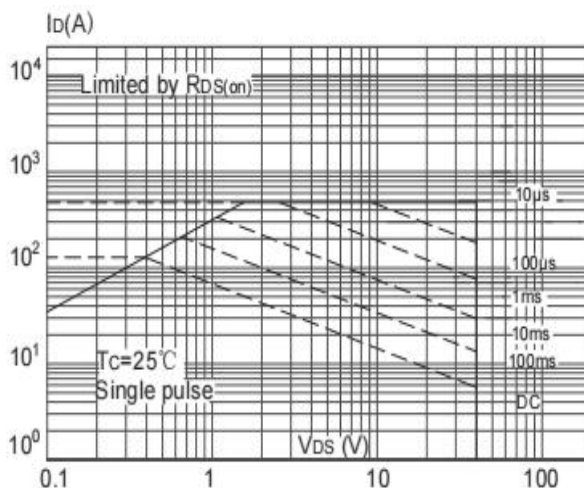


Figure 10: Safe Operating Area

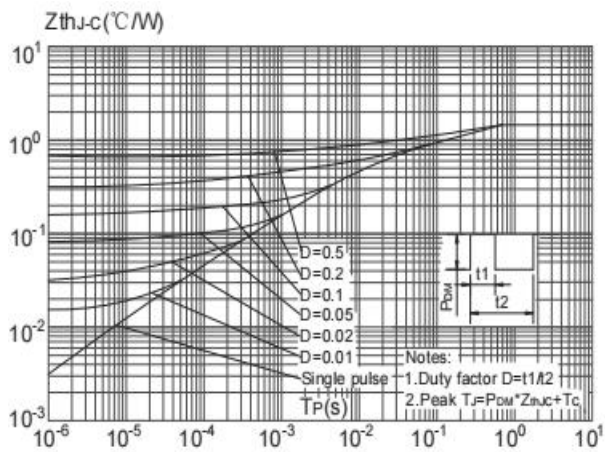
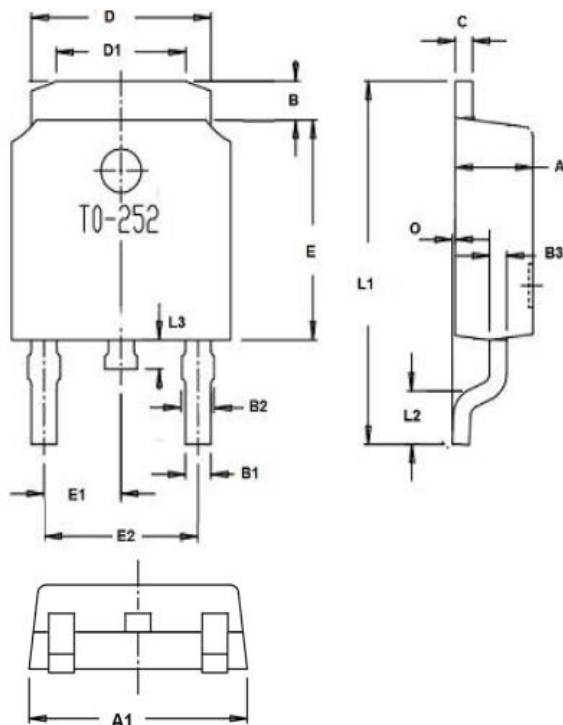


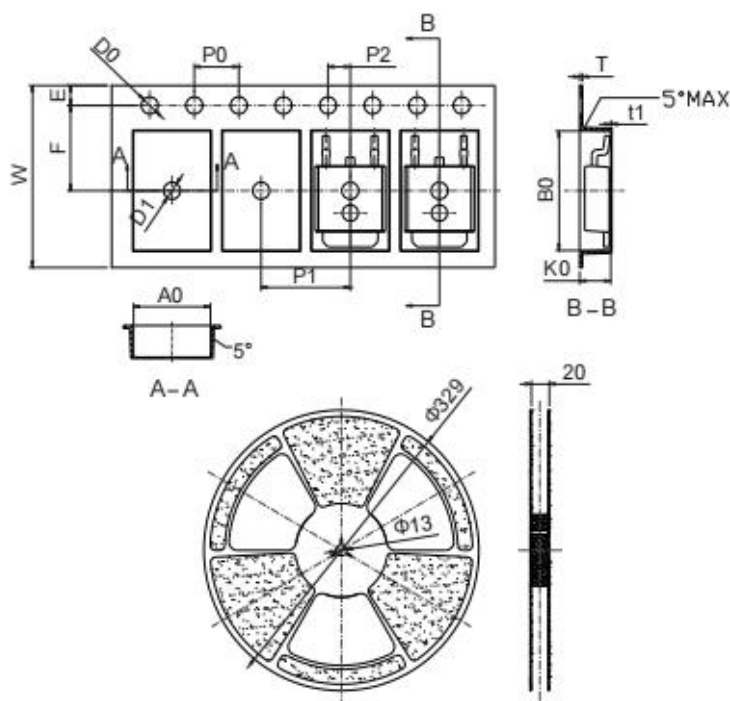
Figure 11: Transient Thermal Response Curve

■ 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		

■ Reel Dimension 编带卷盘尺寸



Ref.	Millimeters		
	Min.	Typ.	Max.
W	15.90	16.00	16.10
E	1.65	1.75	1.85
F	7.40	7.50	7.60
D0	1.40	1.50	1.60
D1	1.40	1.50	1.60
P0	3.90	4.00	4.10
P1	7.90	8.00	8.10
P2	1.90	2.00	2.10
A0	6.85	6.90	7.00
B0	10.45	10.50	10.60
K0	2.68	2.78	2.88
T	0.24		0.27
t1	0.10		
10P0	39.80	40.00	40.20