

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

$R_{DS(ON)}=25m\Omega(\text{Type})@V_{GS}=-10V$

$R_{DS(ON)}=26m\Omega(\text{Type})@V_{GS}=-4.5V$

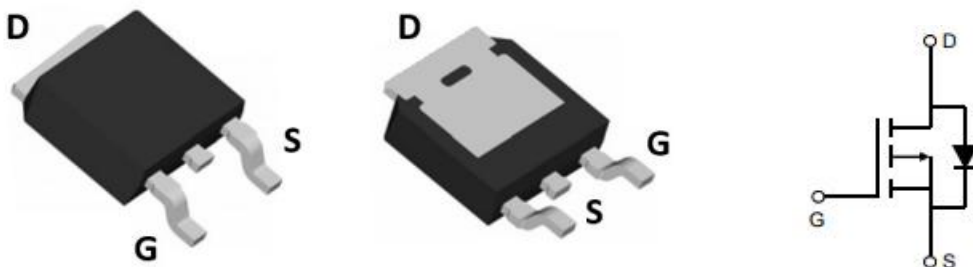
■Applications 应用

Load switch 负载开关

DC/DC Converter 电压转换

Synchronous Rectifier 同步整流

■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}	-100	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 $T_C = 25^\circ C$ at $T_C = 25^\circ C$)	-39 -24	A
Drain Current (pulsed)漏极电流-脉冲	I_{DM}	-156	A
Total Device Dissipation 总耗散功率	$P_D(\text{at } T_C = 25^\circ C)$	104	W
Total Device Dissipation 总耗散功率	$P_D(\text{at } T_C = 25^\circ C)$	40	W
Thermal Resistance Junction-Case 结壳热阻	$R_{\theta JC}$	1.2	$^\circ C/W$
Avalanche Energy Single Pulse 雪崩能量	E_{AS}	676	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}	-100	—	—	V
Gate Threshold Voltage 栅极开启电压($I_D = -250\mu\text{A}, V_{GS} = V_{DS}$)	$V_{GS(th)}$	-1	-1.8	-2.5	V
Zero Gate Voltage Drain Current 零栅压漏极电流($V_{GS}=0\text{V}, V_{DS}= -100\text{V}$)	I_{DSS}	—	—	-1	μA
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($I_D = -20\text{A}, V_{GS} = -10\text{V}$) ($I_D = -20\text{A}, V_{GS} = -4.5\text{V}$)	$R_{DS(ON)}$	—	25 26	31.6 34.6	$\text{m}\Omega$
Diode Forward Voltage Drop 内附二极管正向压降($I_{SD} = -1\text{A}, V_{GS}=0\text{V}$)	V_{SD}	—	-0.7	-1.3	V
Input Capacitance 输入电容 ($V_{GS}=0\text{V}, V_{DS}= -50\text{V}, f=1\text{MHz}$)	C_{ISS}	—	13336	—	pF
Common Source Output Capacitance 共源输出电容($V_{GS}=0\text{V}, V_{DS}= -50\text{V}, f=1\text{MHz}$)	C_{OSS}	—	510	—	pF
Reverse Transfer Capacitance 反馈电容 ($V_{GS}=0\text{V}, V_{DS}= -50\text{V}, f=1\text{MHz}$)	C_{RSS}	—	471	—	pF
Total Gate Charge 栅极电荷密度 ($V_{DS}= -50\text{V}, I_D = -20\text{A}, V_{GS} = -10\text{V}$)	Q_g	—	197	—	nC
Gate Source Charge 栅源电荷密度 ($V_{DS}= -50\text{V}, I_D = -20\text{A}, V_{GS} = -10\text{V}$)	Q_{gs}	—	26	—	nC
Gate Drain Charge 栅漏电荷密度 ($V_{DS}= -50\text{V}, I_D = -20\text{A}, V_{GS} = -10\text{V}$)	Q_{gd}	—	45	—	nC
Turn-ON Delay Time 开启延迟时间 ($V_{DS}= -50\text{V}, I_D = -20\text{A}, R_{GEN}=3\Omega, V_{GS} = -10\text{V}$)	$t_{d(on)}$	—	26	—	ns
Turn-ON Rise Time 开启上升时间 ($V_{DS}= -50\text{V}, I_D = -20\text{A}, R_{GEN}=3\Omega, V_{GS} = -10\text{V}$)	t_r	—	33	—	ns
Turn-OFF Delay Time 关断延迟时间 ($V_{DS}= -50\text{V}, I_D = -20\text{A}, R_{GEN}=3\Omega, V_{GS} = -10\text{V}$)	$t_{d(off)}$	—	274	—	ns
Turn-OFF Fall Time 关断下降时间 ($V_{DS}= -50\text{V}, I_D = -20\text{A}, R_{GEN}=3\Omega, V_{GS} = -10\text{V}$)	t_f	—	90	—	ns

■ Typical Characteristic Curve 典型特性曲线

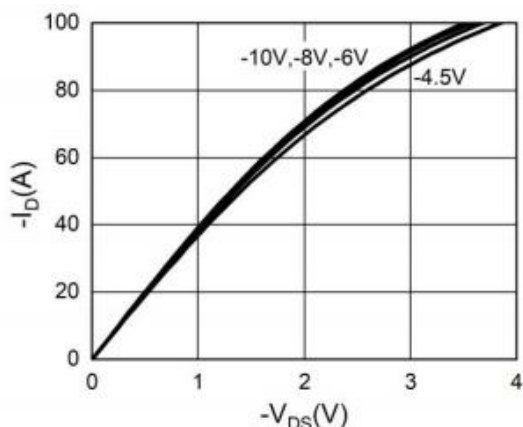


Figure 1: Output Characteristics

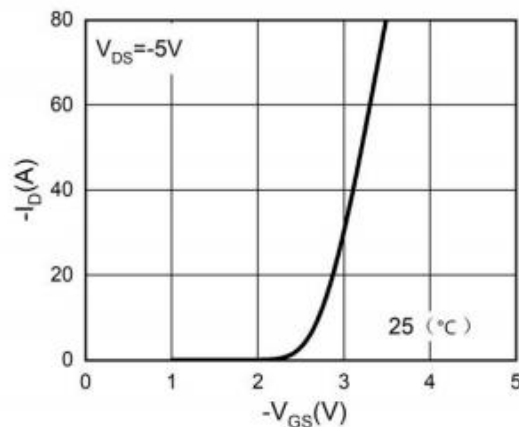


Figure 2: Transfer Characteristics

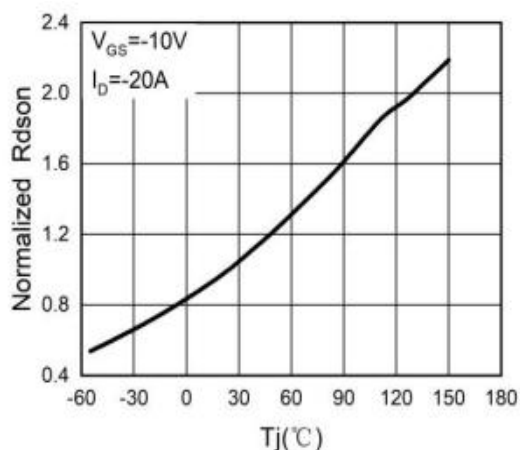


Figure 3: On-Resistance vs. T_J

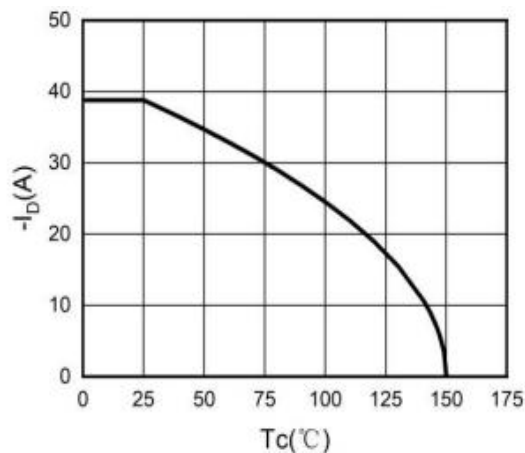


Figure 4: Drain Current vs. T_C

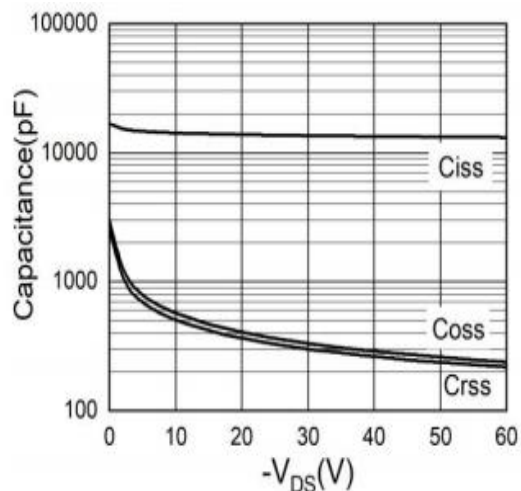


Figure 5: Capacitance Characteristics

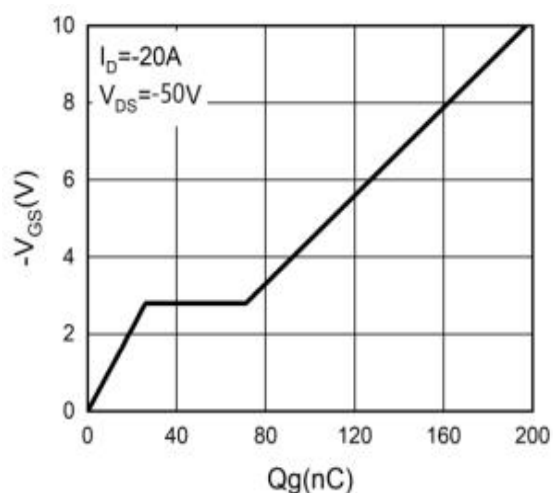


Figure 6: Gate-Charge Characteristics

■ Typical Characteristic Curve 典型特性曲线

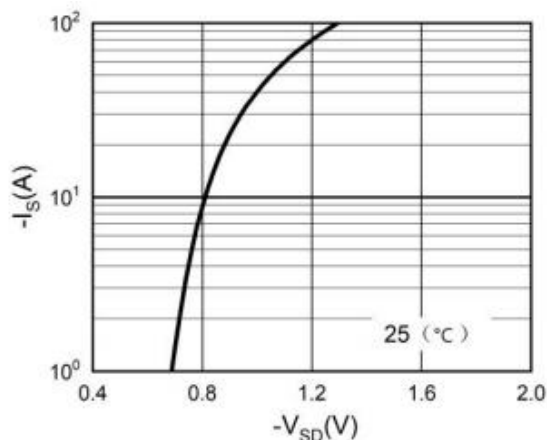


Figure 7: Diode Characteristics

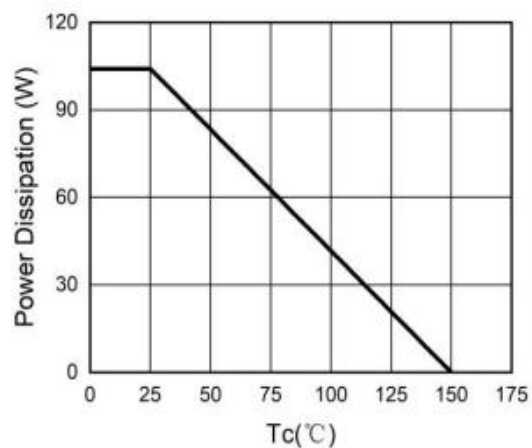


Figure 8: Power Characteristics

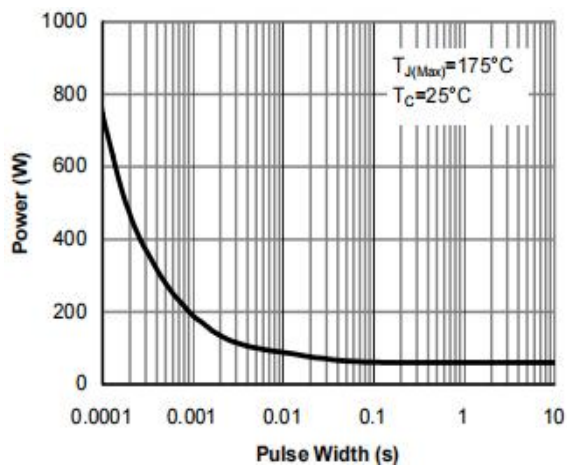


Figure 9: Power Rating Characteristics

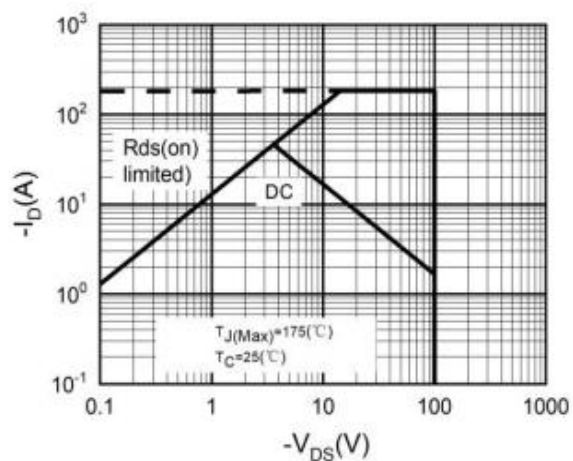


Figure 10: Safe Operating Area

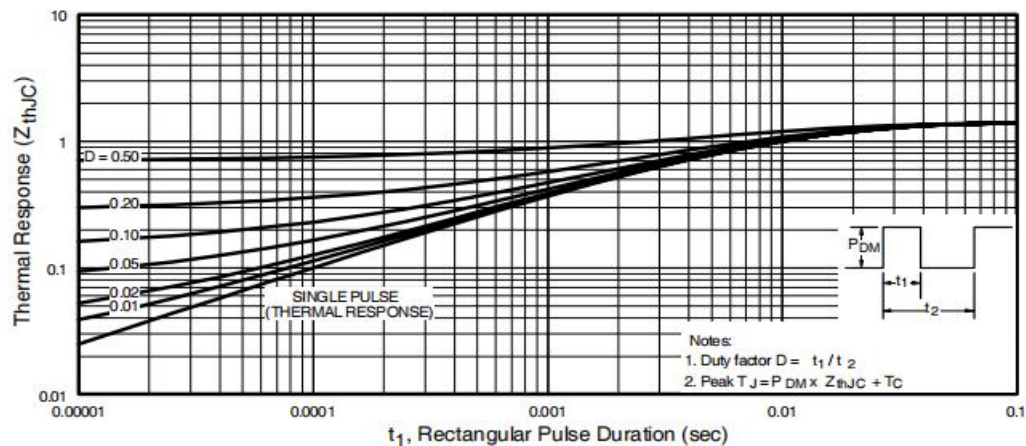
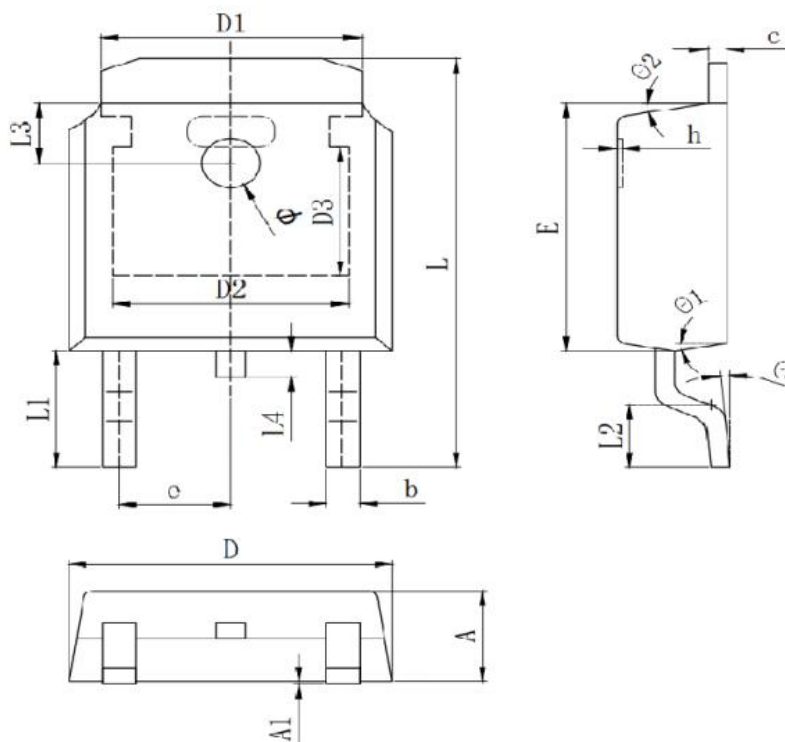


Figure 11: Transient Thermal Response Curve

■ Package Dimension 外形封装尺寸



Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c(电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166 REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
Φ	1.100	1.200	1.300
θ	0°		8°
θ1	9° TYP		
θ2	9° TYP		