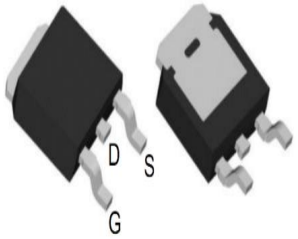
100V_{DS}/±20V_{GS} N-Channel Enhancement Mode MOSFET

Features

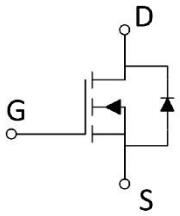
- V_{DS}=100V,I_D=15A
- $R_{DS(ON)}$=95mΩ（TYP.）V_{GS}=10V
- $R_{DS(ON)}$=135mΩ（TYP.）V_{GS}=4.5V
- Reliable and Rugged
- Avalanche Rated
- Low On-Resistance
- High Current Capability

TO-252



Applications

- Load Switch
- Power management in portable/desktop PCs
- DC/DC conversion



Ordering Information

Device	package	Device Marking	Package Qty.
FTD150N10N	TO-252	D150N10N	2500/PCS

Absolute Maximum Ratings (T_C=25℃,unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V_{GS}=0V)	V_{DS}	100	V
Gate-Source Voltage (V_{GS}=0V,static)	V_{GS}	±20	V
Continuous Drain Current (T_C=25℃)	I_D	15	A
Continuous Drain Current (T_C=100℃)		11	A
Pulesd Drain Current	I_{DM}	150	A
Maximum Power Dissipation	P_D	140	W
Maximum Power Dissipation		0.9	W/℃
Single pulse avalanche energy	Eas	450	mJ
Operating,Storage Temperature Range	T_J,T_{STG}	-55~175	℃

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	-	2.5	-	℃/ W

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V	-	-	1	μA
Gate -Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS},I_D=250μA		0.85	1.2	V
Drain-SourceOn-stageResistance	$R_{DS(ON)}$	V_{GS}=10V,I_D=20A	-	85	100	mΩ
		V_{GS}=4.5V,I_D=20A	-	115	145	

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	V_{DS}=15V	-	3300	-	pF
Output capacitance	C_{oss}	V_{GS}=0V	-	280	-	
Reverse transfer capacitance	C_{rss}	f=1MHz	-	221	-	
Gate Resistance	R_g	f=1MHz	-	1.5	-	Ω
Total Gate Charge	Q_g	V_{DS}=15V	-	23	-	nC
Gate Source Charge	Q_{gs}	V_{GS}=10V	-	7	-	
Gate Drain Charge	Q_{gd}	I_D=20A	-	4.5	-	
Turn-on delay Time	$t_{d(on)}$	V_{GS}=10V	-	10	-	ns
Rise time	t_r	V_{DS}=15V	-	8	-	
Turn-off delay Time	$t_{d(off)}$	R_L=0.75Ω	-	30	-	
Fall time	t_f	R_G=3Ω	-	5	-	

Reverse Diode Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Body Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_{SD}=1A	-	0.85	1.2	V
Reverse Recovery Time	t_{rr}	V_{GS}=0V,I_{SD}=20A	-	22	-	ns
Reverse Recovery Charge	Q_{rr}	d_i/d_t=500A/μs	-	11	-	nC

Electrical Characteristics Diagrames

Figure 1. On-Regin Characteristics

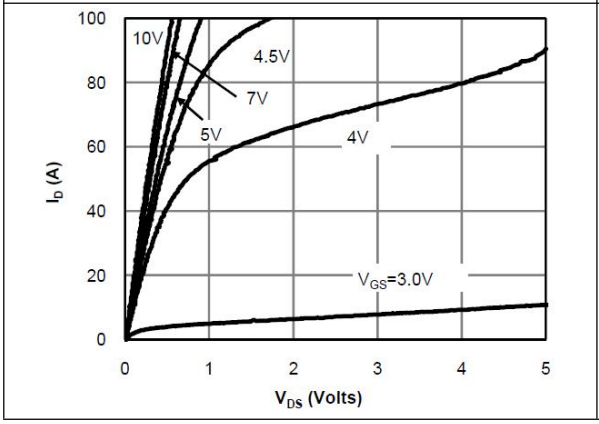


Figure 2. Transfer Characteristics

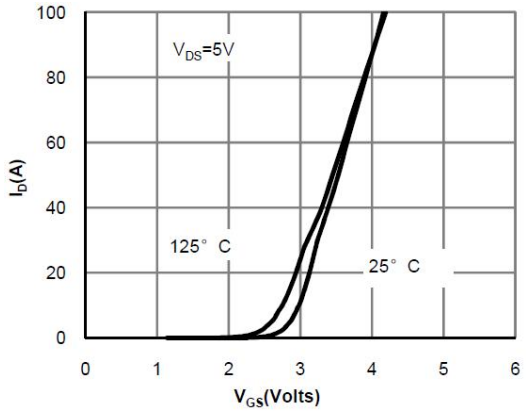


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

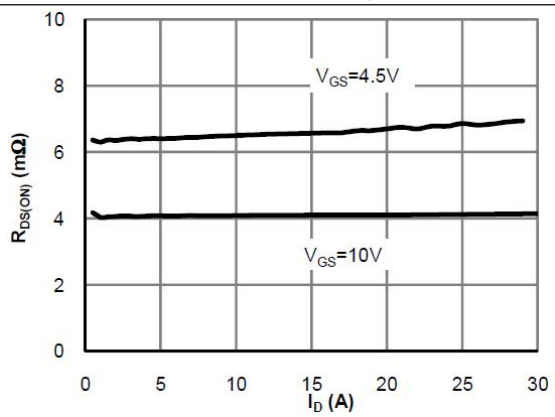


Figure 4. On-Resistance vs. Junction Temperature

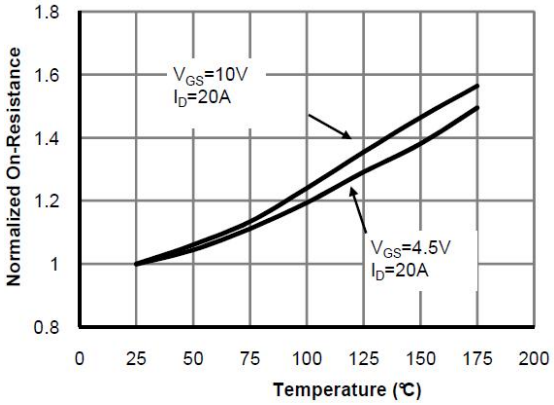


Figure 5. On-Resistance vs. Gate-Source Voltage

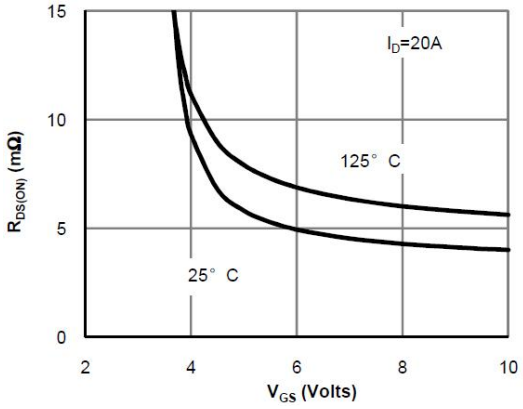


Figure 6. Body-Diode Characteristics

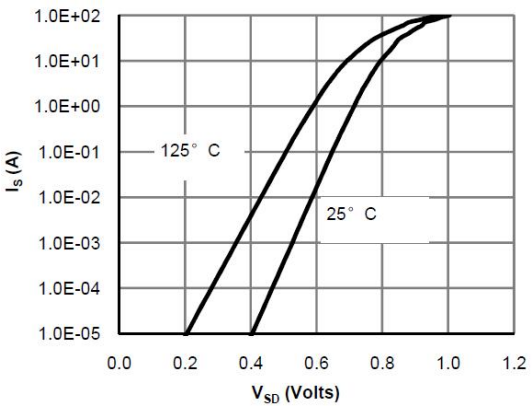


Figure 7. Gate-Charge Characteristics

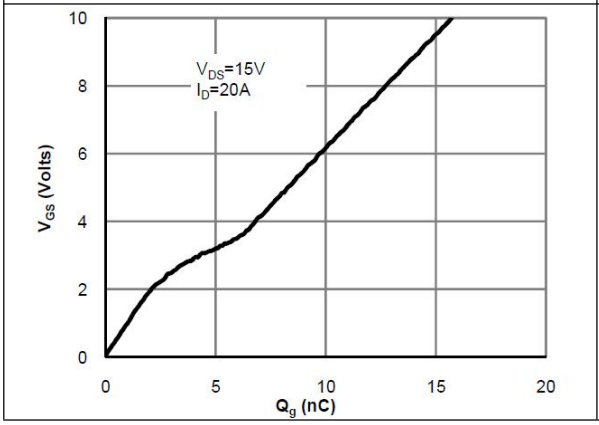


Figure 8. Capacitance Characteristics

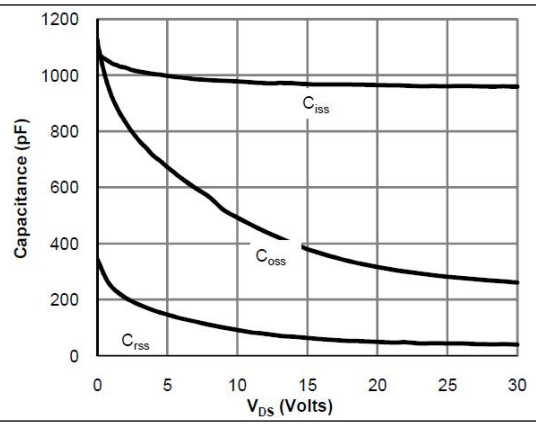


Figure 9. Maximum Forward Biased Safe Operating Area

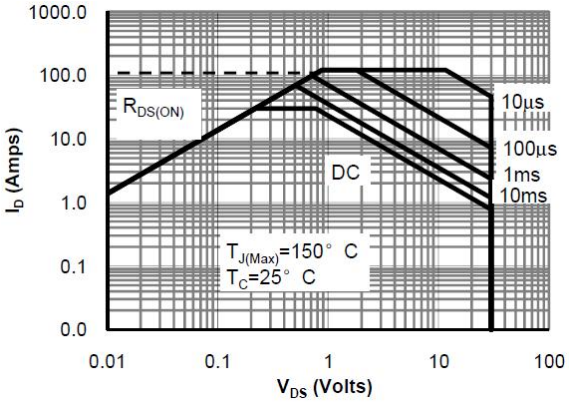


Figure 10. Single Pulse Power Rating Junction-to-Case

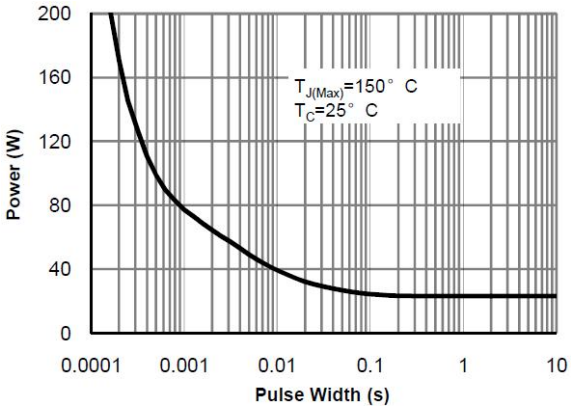


Figure 11. Normalized Maximum Transient Thermal Impedance

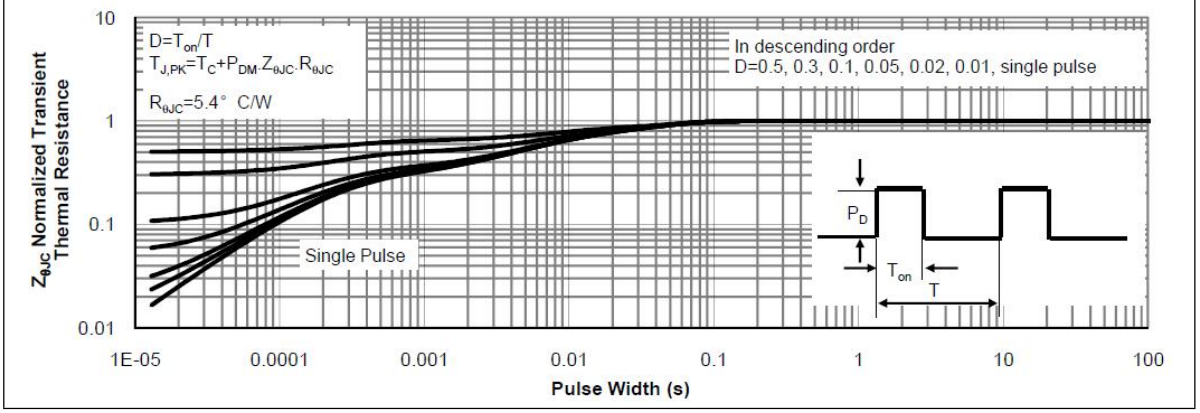


Figure 12. Power De-rating

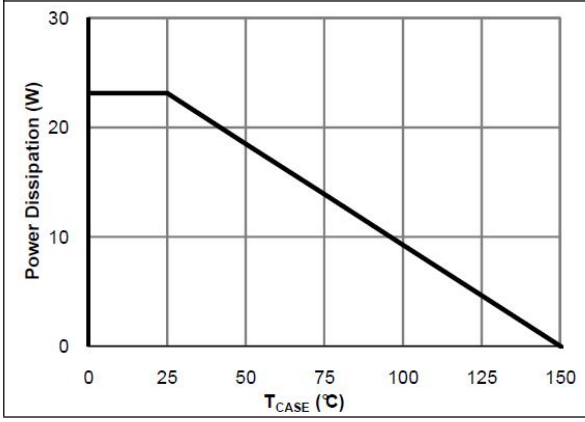


Figure 13. Current De-rating

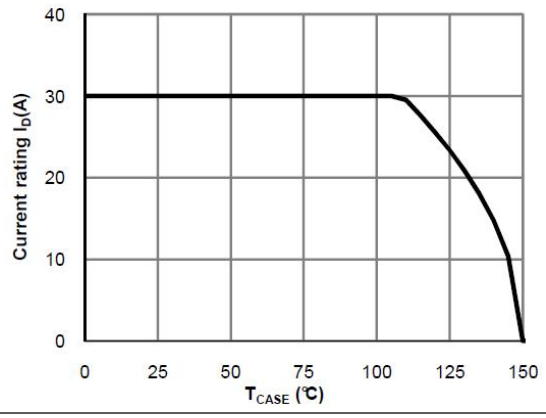


Figure 14. Single Pulse Power Rating Junction-to-Ambient

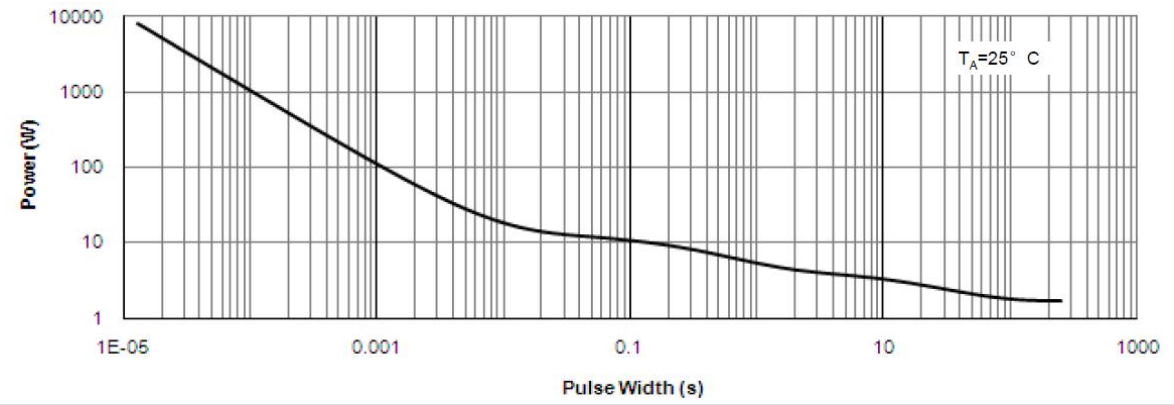
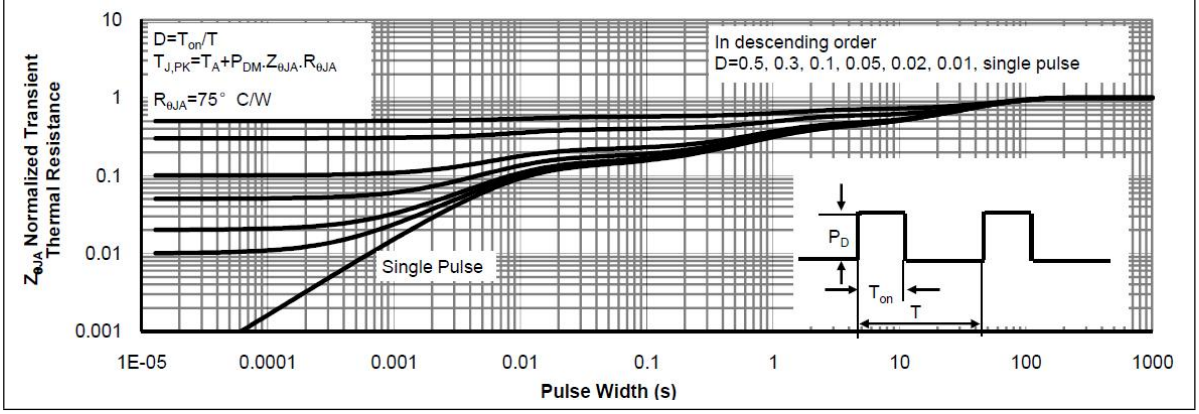
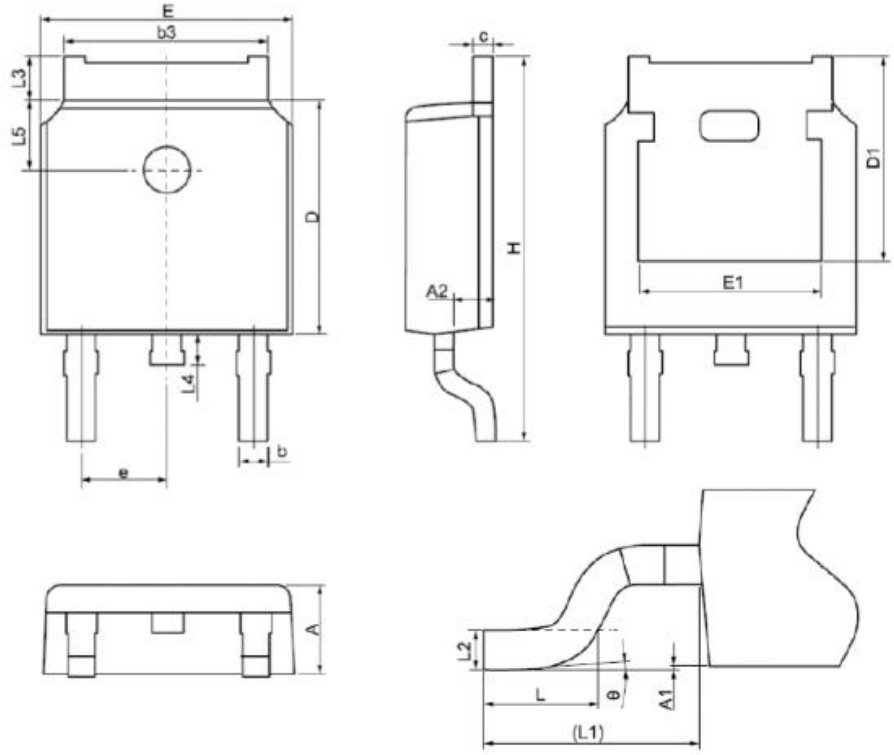


Figure 15. Normalized Maximum Transient Thermal Impedance



Physical Dimensions

TO-252



Symbol	Dimension（mm）			Symbol	Dimension（mm）		
	Min	Nom	Max		Min	Nom	Max
A	2.20	2.30	2.40	e	2.286(BSC)		
A1	0.00	-	0.20	H	9.40	10.10	10.50
A2	0.97	1.07	1.17	L	1.38	1.50	1.75
b	0.68	0.78	0.90	L1	2.90(REF)		
b3	5.20	5.33	5.50	L2	0.51(BSC)		
c	0.43	0.53	0.63	L3	0.88	-	1.28
D	5.98	6.10	6.22	L4	0.50	-	1.00
D1	5.30(REF)			L5	1.65	1.80	1.95
E	6.40	6.60	6.80	θ	0°	-	8°
E1	4.63	-	-	-	-	-	-