



-60V, -30A, 24mΩ Fast Switching MOSFETs

Features

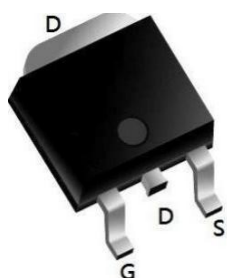
- Super Low Gate Charge
- Advanced high cell density Trench technology
- Excellent CdvV/dt effect decline
- 100% EAS Guaranteed

Applications

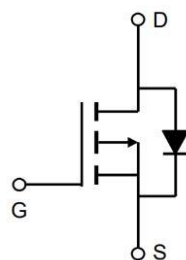
- PWM applications
- Load Switch
- Power management

RoHS

TO252-3L



Equivalent Circuit



Absolute Maximum Ratings (T_A=25°C unless otherwise specified noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	-60	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current ¹	I _D @T _C =25°C	-30	A
	I _D @T _C =100°C	-22.5	A
Pulsed Drain Current ²	I _{DM}	-144	A
Single Pulse Avalanche Energy ³	EAS	196	mJ
Total Power Dissipation	P _D	79	W
Storage Temperature Range	T _{STG}	-55 to 175	°C
Operating Junction Temperature Range	T _J	-55 to 175	°C
Maximum Temperature for Soldering	T _L	260	°C
Thermal Resistance Junction-ambient	R _{θJA}	-	°C/W
Thermal Resistance Junction-Case	R _{θJC}	1.9	°C/W



Electrical Characteristics(T_j=25℃ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	V _{GS} =0V, I _D =-250μA	-60	-	-	V
Drain to Source Leakage Current	I _{DSS}	V _{DS} =-60V, V _{GS} =0V	-	-	-1	μA
Gate to Body 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	-1.0	-1.8	-2.5	V
Drain-Source On-State Resistance ²	R _{DS(on)}	V _{GS} =-10V, I _D =-15A	-	24	29	mΩ
		V _{GS} =-4.5V, I _D =-10A	-	30.4	39	
Forward Transconductance	g _{fs}	V _{DS} =-5V, I _D =-15A	-	35	-	S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-25V, f=1.0MHz	-	4026	-	pF
Output Capacitance	C _{oss}		-	134	-	
Reverse Transfer Capacitance	C _{rss}		-	98	-	
Total Gate Charge	Q _g	V _{DS} =-30V, I _D =-20A, V _{GS} =-10V	-	68	-	nC
Gate-Source Charge	Q _{gs}		-	10.5	-	
Gate-Drain("Miller")Charge	Q _{gd}		-	13	-	
Turn-on Delay Time	T _{d(on)}	V _{GS} =-10V, R _G =3Ω, V _{DS} =-30V, R _L =1.5Ω	-	12.2	-	nS
Turn-on Rise Time	t _r		-	10	-	
Turn-Off Delay Time	T _{d(off)}		-	64	-	
Turn-Off Fall Time	T _f		-	14	-	
Source-Drain Current (Body Diode)	I _{SD}	-	-	-	-30	A
Diode Forward Voltage ³	V _{SD}	V _{GS} =0V, I _S =-15A	-	-	-1.2	V
Reverse Recovery time	t _{rr}	I _S =-20A, dI/dt=100A/μs	-	26	-	ns
Reverse Recovery Charge	Q _{rr}		-	29	-	nC

Note :

1.Repetitive Rating: Pulse width limited by maximum junction temperature.

2.EAS condition: T_J=25℃, V_{DD}=40V, V_G=-10V, R_G=25Ω, L=0.5mH.

3.Repetitive Rating: Pulse width limited by maximum junction temperature.



Typical Performance Characteristics

Figure 1. Output Characteristics

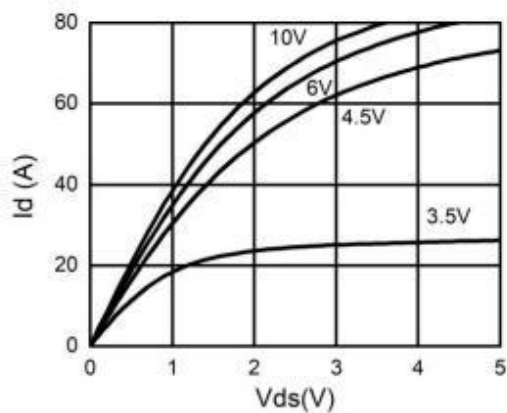


Figure 2. Transfer Characteristics

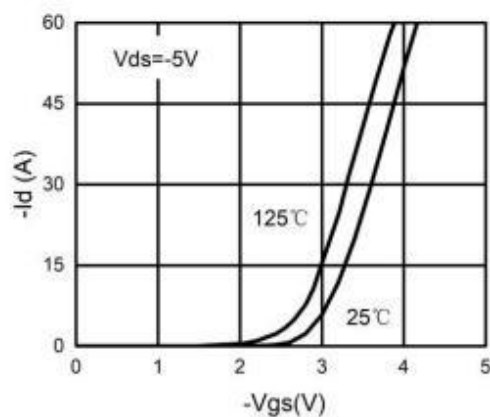


Figure 3. Power Dissipation

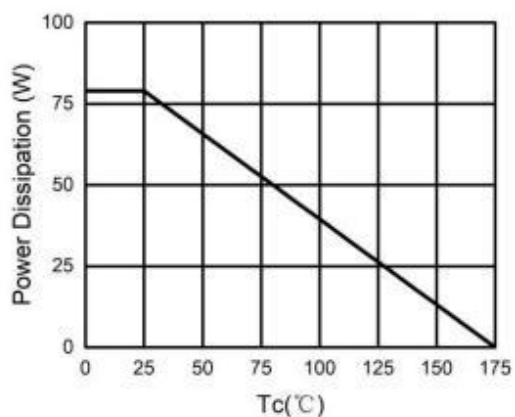


Figure 4. Drain Current

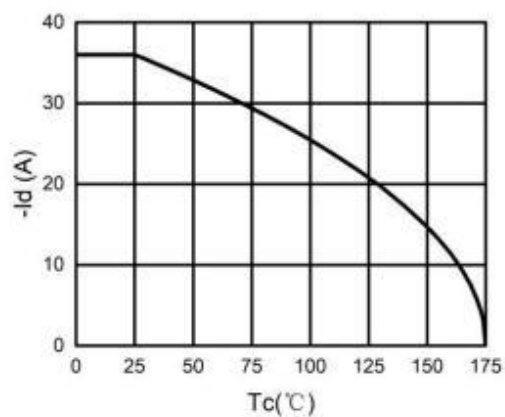


Figure 5. BV_{DSS} vs Junction Temperature

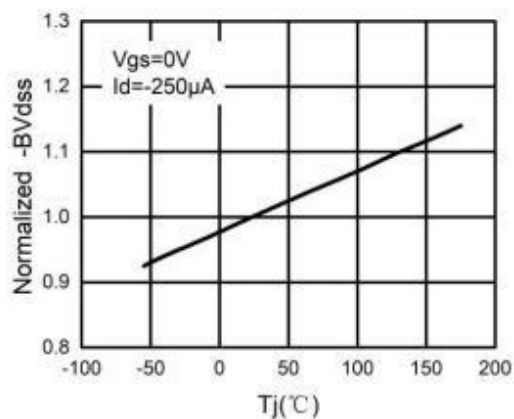


Figure 6. $R_{DS(ON)}$ vs Junction Temperature

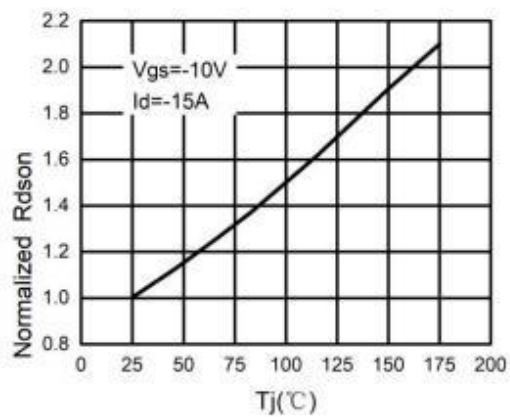




Figure 7. Gate Charge Waveforms

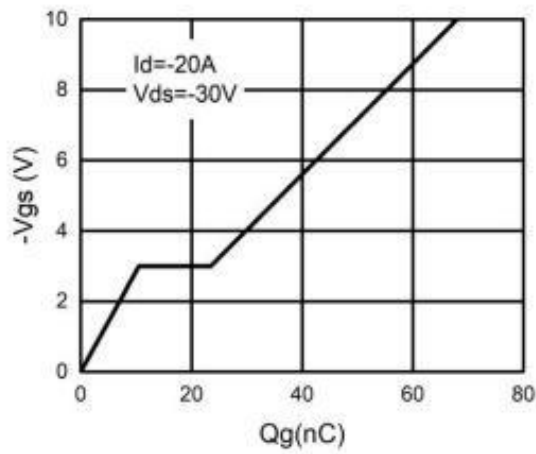


Figure 8. Capacitance

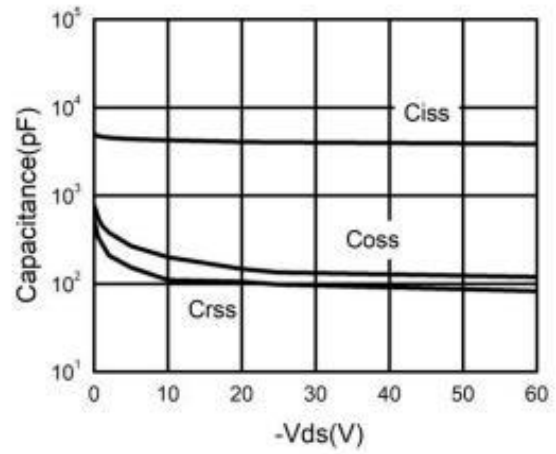


Figure 9. Body-Diode Characteristics

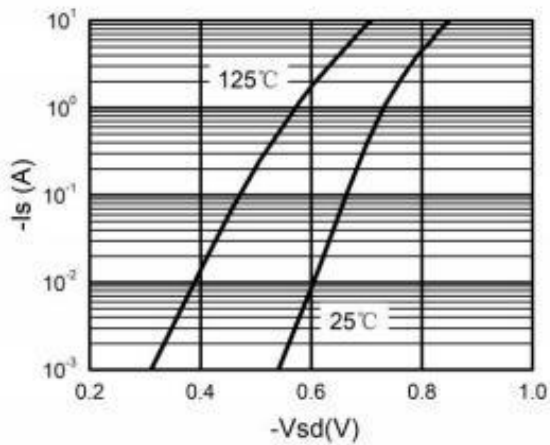
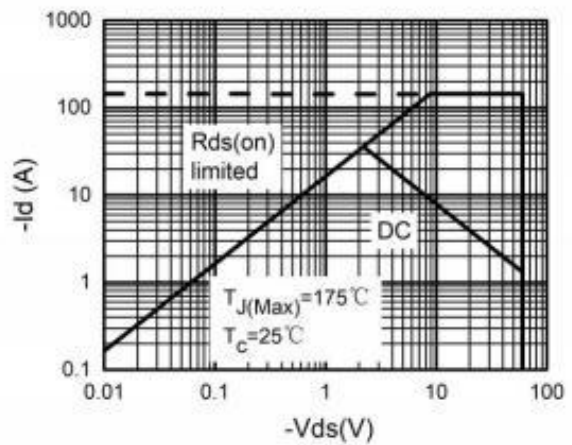
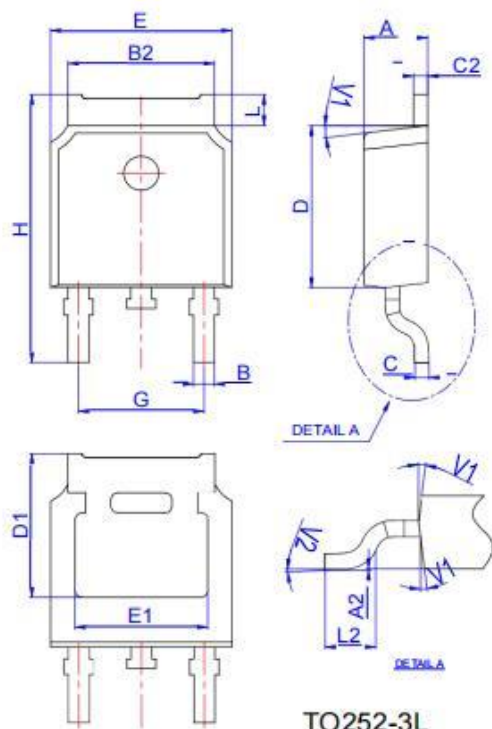


Figure 10. Maximum Safe Operating Area



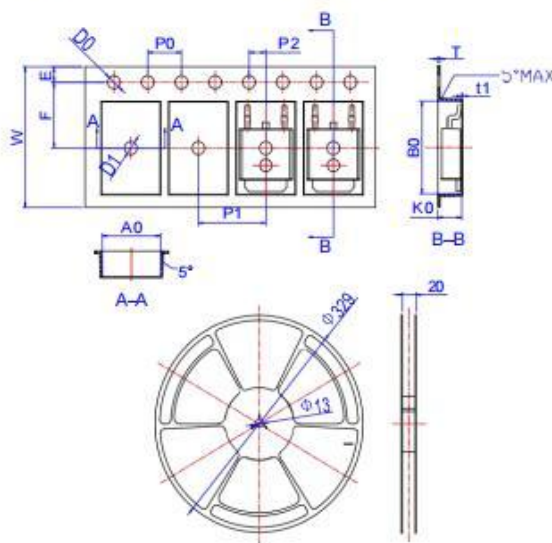


Package Mechanical Data TO252-3L



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Reel Spectification-TO252-3L



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583