



60V, 20A, 25mΩ Fast Switching MOSFETs

Features

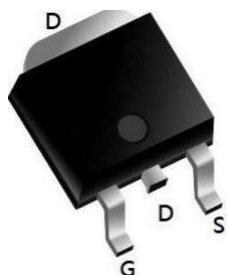
- Super Low Gate Charge
- Advanced high cell density Trench technology
- Excellent CdvV/dt effect decline
- 100% EAS Guaranteed

Applications

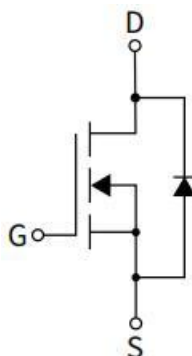
- PWM applications
- Load Switch
- Power management

RoHS

TO252-3L



Equivalent Circuit



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	60	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current	I _D @T _C =25°C	20	A
	I _D @T _C =100°C	10	A
Pulsed Drain Current ¹	I _{DM}	80	A
Single Pulse Avalanche Energy ²	EAS	39	mJ
Total Power Dissipation	P _D	41.7	W
Storage Temperature Range	T _{STG}	-55 to 175	°C
Operating Junction Temperature Range	T _J	-55 to 175	°C
Thermal Resistance Junction-Ambient	R _{θJA}	-	°C/W
Thermal Resistance Junction-Case	R _{θJC}	50	°C/W



Electrical Characteristics(T_J=25℃ unless otherwise noted)

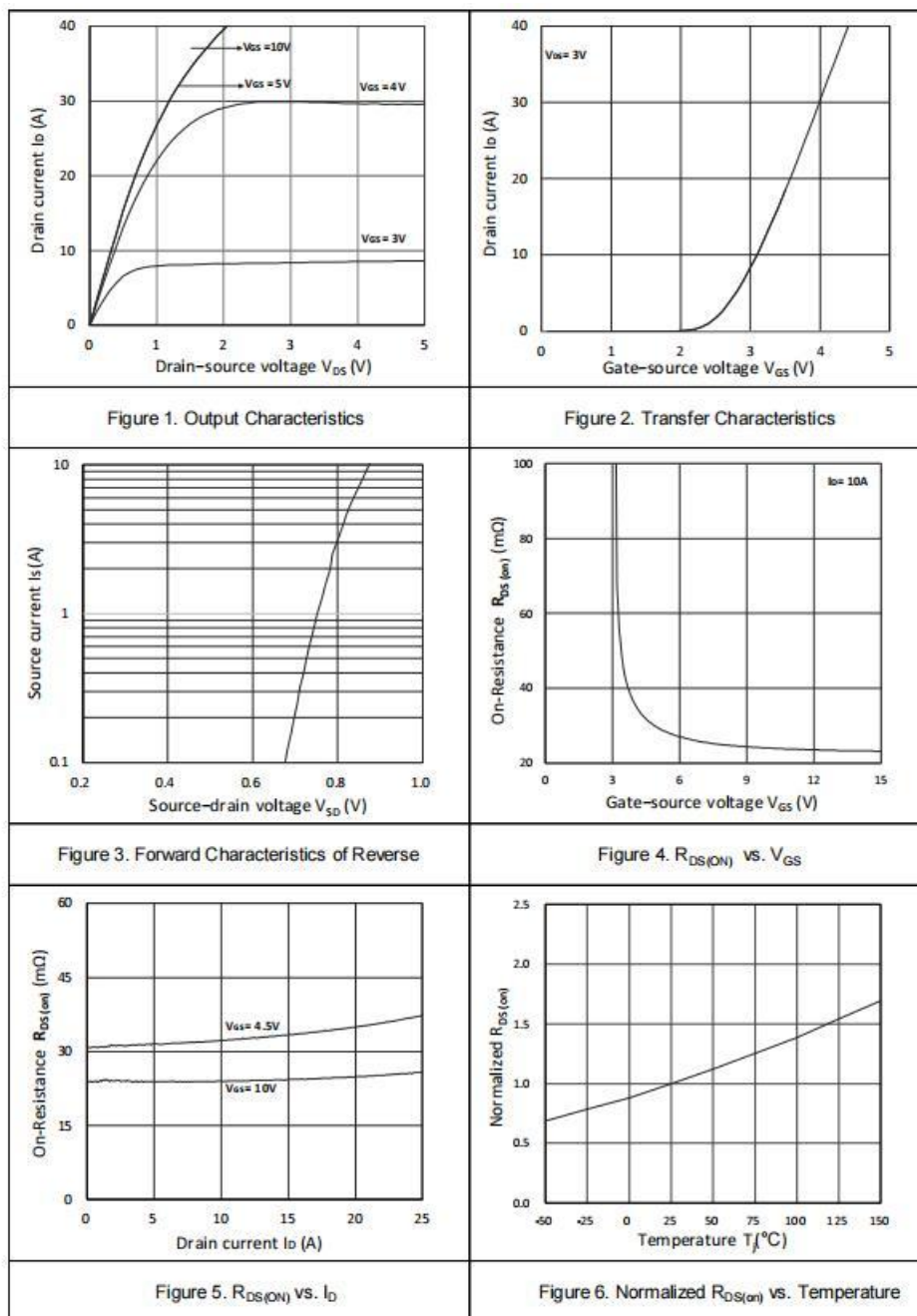
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	60	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V, T _J =25℃	-	-	1	μA
		V _{DS} =60V, V _{GS} =0V, T _J =100℃	-	-	100	
Gate to Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	1.7	2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =10A	-	23	32	mΩ
		V _{GS} =4.5V, I _D =5A	-	31.5	40	
Forward Trans conductance ⁴	g _{fs}	V _{DS} =5V, I _D =10A	-	15.5	-	S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =30V, f=1.0MHz	-	1355	-	pF
Output Capacitance	C _{oss}		-	60	-	
Reverse Transfer Capacitance	C _{rss}		-	49	-	
Gate Resistance	R _g	f=1.0MHz	-	1.2	-	Ω
Total Gate Charge	Q _g	V _{DD} =30V, I _D =10A, V _{GS} =10V	-	22	-	nC
Gate-Source Charge	Q _{gs}		-	4.2	-	
Gate-Drain("Miller")Charge	Q _{gd}		-	6.9	-	
Turn-on Delay Time	T _{d(on)}	V _{GS} =10V, R _G =3Ω, V _{DD} =30V, I _D =10A	-	6.4	-	nS
Turn-on Rise Time	t _r		-	15.3	-	
Turn-Off Delay Time	T _{d(off)}		-	25	-	
Turn-Off Fall Time	T _f		-	7.6	-	
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =10A	-	-	1.2	V
Continuous Source Current ^{1,5}	I _S	-	-	-	20	A
Reverse Recovery Time	T _{rr}	I _F =10A, dI/dt=100A/μs	-	26	-	Ns
Reverse Recovery Charge	Q _{rr}		-	45	-	nC

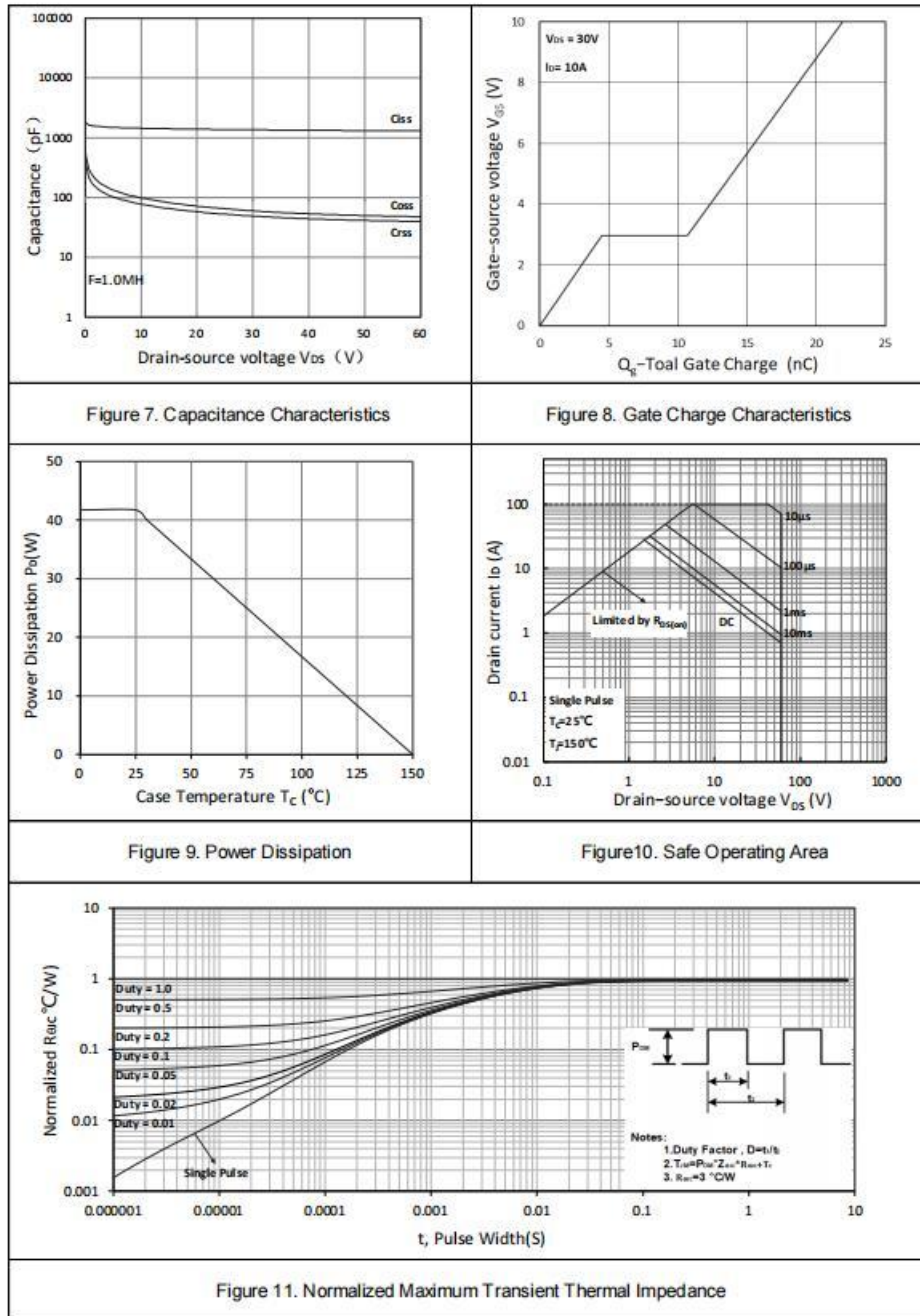
Note :

- 1.Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=150℃
- 2.The EAS data shows Max. rating . The test condition is V_{DD}=25V, V_{GS}=10V, L=0.4mH, I_{AS}=14A
- 3.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
- 4.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
- 5.This value is guaranteed by design hence it is not included in the production test.



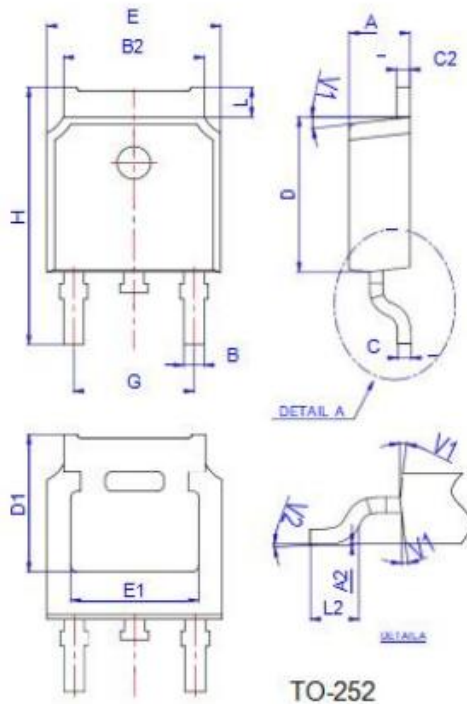
Typical Performance Characteristics



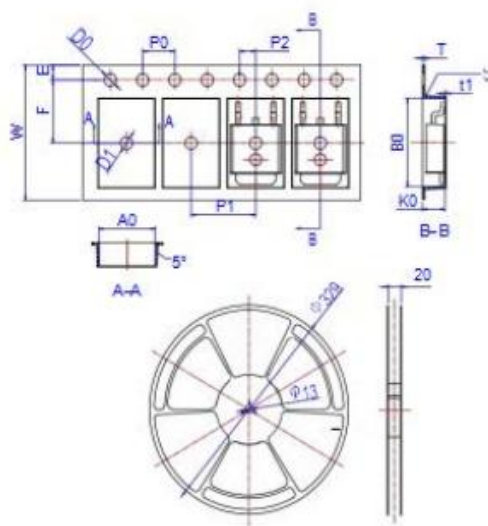




Package Mechanical Data TO-252



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	1.36		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°



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