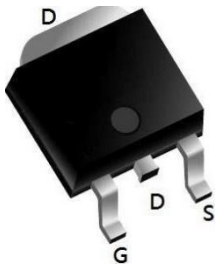


Features

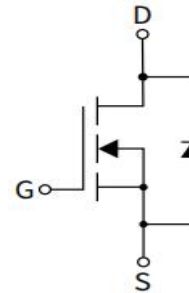
- 100% EAS Guaranteed
- Super Low Gate Charge
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

Application

- PWM applications
- Load Switch
- Power management



TO252-3L top view



Schematic diagram

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, $V_{GS}@10V$	I_D	$T_C = 25^\circ\text{C}$ 80	A
		$T_C = 100^\circ\text{C}$ 50	A
Pulsed Drain Current ¹	I_{DM}	350	A
Single Pulsed Avalanche Energy ⁴	EAS	100	mJ
Avalanche Current	I_{AS}	-	A
Total Power Dissipation	P_D	50	W
Storage Temperature Range	T_{STG}	-55 ~ 150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-55 ~ 150	$^\circ\text{C}$

Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	29	$^{\circ}\text{C/W}$
Thermal Resistance Junction to Case	$R_{\theta JC}$	2.5	$^{\circ}\text{C/W}$

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Drain to Source Leakage Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	-	-	1	μA
Gate to Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	1.6	2	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=30A$	-	4.2	6	m Ω
		$V_{GS}=4.5V, I_D=20A$	-	6	7.5	
Gate Resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	-	1.4	-	Ω
Total Gate Charge($10V$) ^{2,3}	Q_g	$V_{DS}=15V, V_{GS}=10V,$ $I_D=30A$	-	35	-	nC
Gate-Source Charge	Q_{gs}		-	6.6	-	
Gate-Drain(“Miller”) Charge	Q_{gd}		-	7	-	
Turn-On Delay Time ^{2,3}	$t_{d(on)}$	$V_{DD}=15V, V_{GS}=10V,$ $R_G=3\Omega, I_D=30A$	-	8	-	ns
Rise Time	t_r		-	15	-	
Turn-Off Delay Time	$t_{d(off)}$		-	33	-	
Fall Time	t_f		-	10	-	
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	-	2200	-	pF
Output Capacitance	C_{oss}		-	239	-	
Reverse Transfer Capacitance	C_{rss}		-	201	-	
Continuous Source Current	I_S	$V_G=V_D=0V, \text{Force Current}$	-	80	-	A
Pulsed Source Current	I_{SM}		-	350	-	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=40A, T_J=25^{\circ}\text{C}$	-	-	0.86	V

Note :

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width=300us, duty cycle=2%.
3. Essentially independent of operating temperature.
4. The EAS data shows Max. rating. The test condition is $V_{DD}=15V, V_{GS}=10V, L=0.5\text{mH}$.

Typical Performance Characteristics

Fig1 Output Characteristics

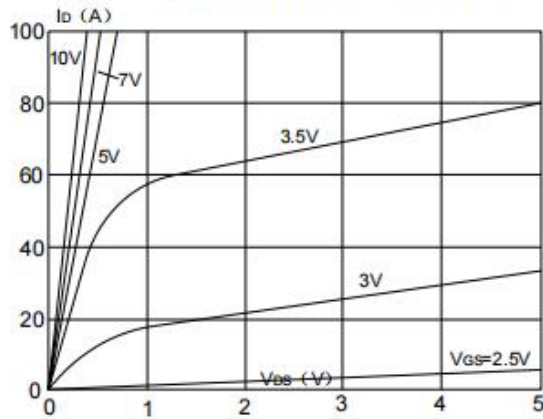


Fig2 Typical Transfer Characteristics

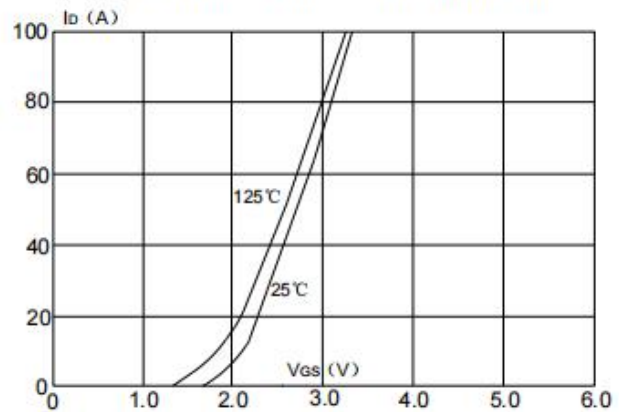


Fig3 On-resistance vs. Drain Current

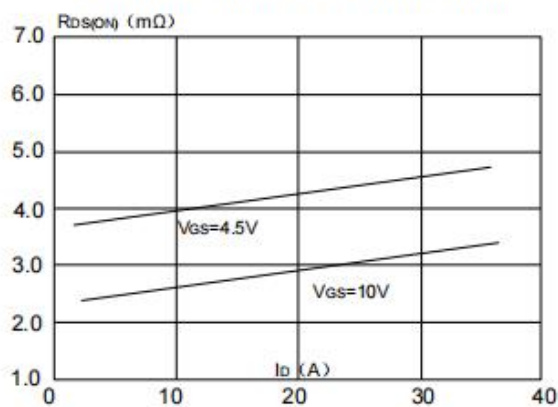


Fig4 Gate Charge Waveform

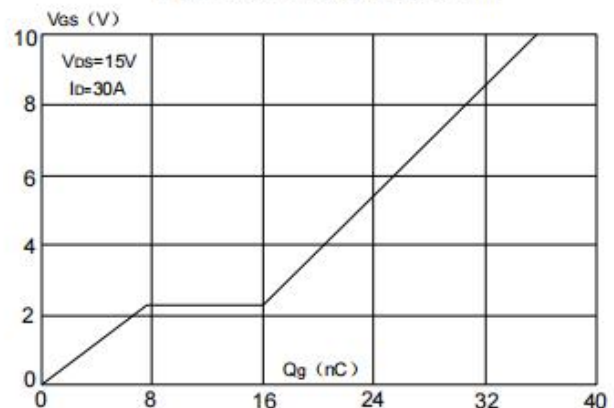


Fig5 Capacitance Characteristics

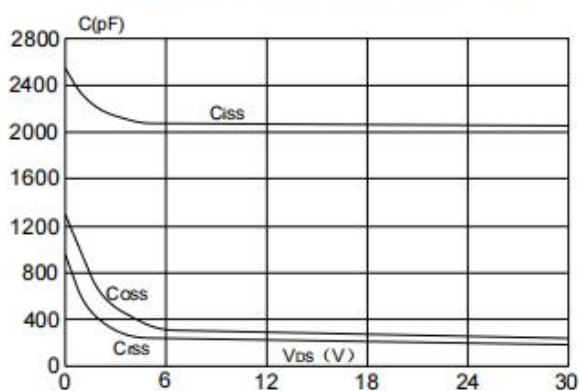


Fig6 Normalized Breakdown Voltage vs. Tj

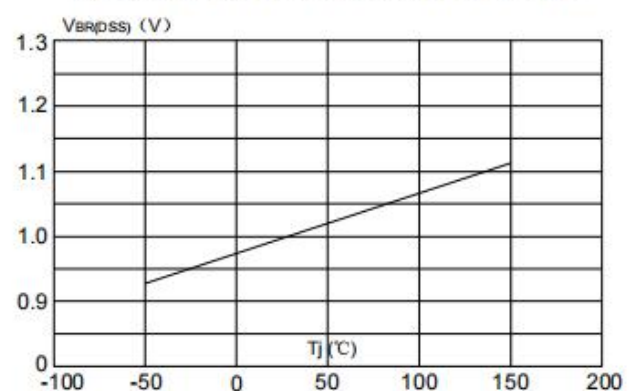


Fig7 Normalized Transient Impedance

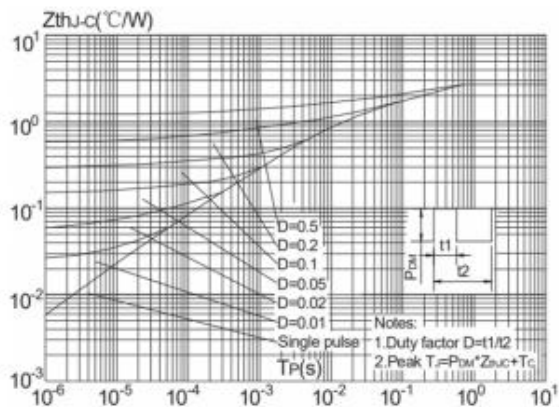


Fig8 Maximum Safe Operation Area

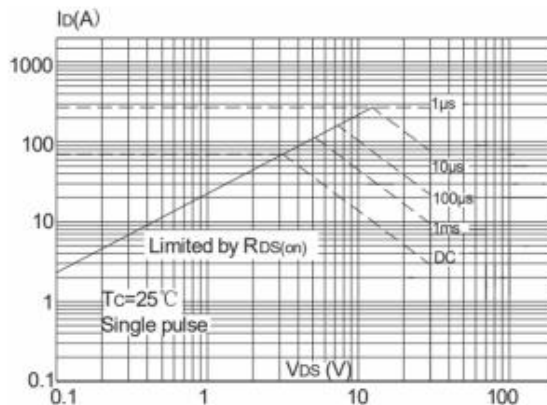


Fig9 Switching Time Waveform

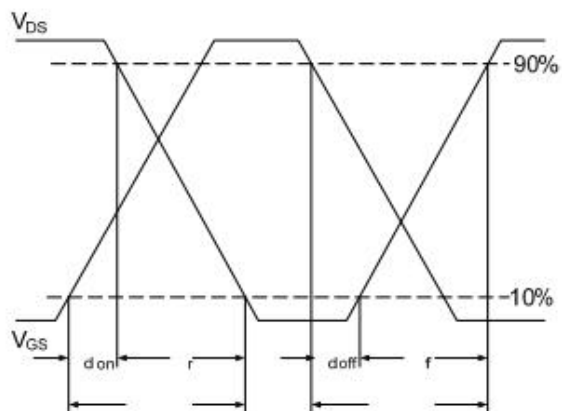
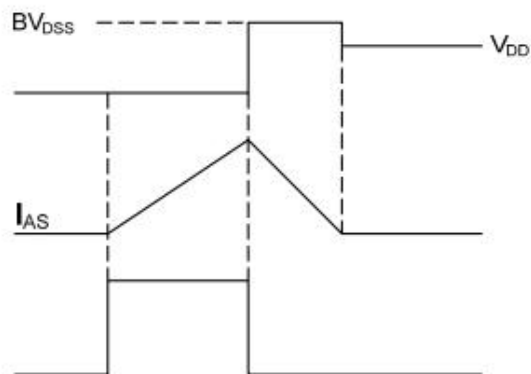


Fig10 EAS Waveform



Package Mechanical Data

TO252-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.380	0.087	0.094
A1	0.000	0.100	0.000	0.004
B	0.800	1.400	0.031	0.055
b	0.710	0.810	0.028	0.032
C	0.460	0.560	0.018	0.022
C1	0.460	0.560	0.018	0.022
D	6.500	6.700	0.256	0.264
D1	5.130	5.460	0.202	0.215
E	6.000	6.200	0.236	0.244
e	2.286TYP		0.090TYP	
e1	4.327	4.727	0.170	0.186
M	1.778REF		0.070REF	
N	0.762REF		0.018REF	
L	9.800	10.400	0.386	0.409
L1	2.9REF		0.114REF	
L2	1.400	1.700	0.055	0.067
V	4.830REF		0.190REF	
Φ	1.100	1.300	0.043	0.051