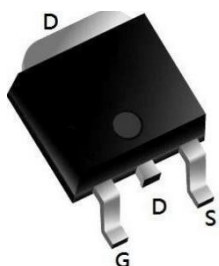


Features

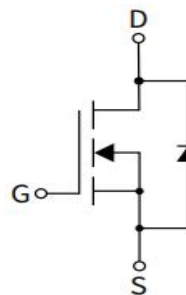
- 100% EAS Guaranteed
- Super Low Gate Charge
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

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, $V_{GS}@10\text{V}$	$T_C = 25^{\circ}\text{C}$	I_D	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	$T_C = 25^{\circ}\text{C}$	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

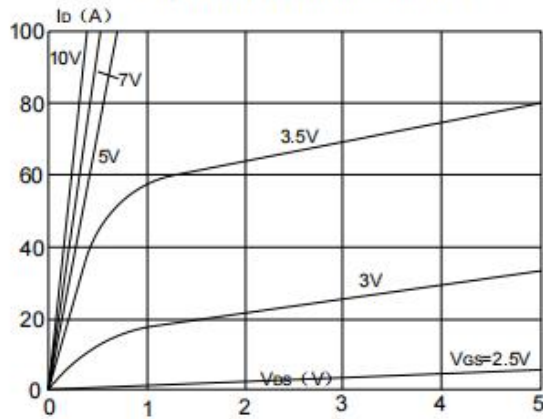


Fig2 Typical Transfer Characteristics

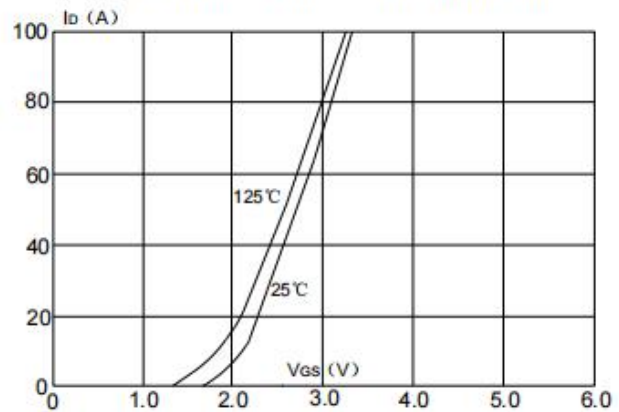


Fig3 On-resistance vs. Drain Current

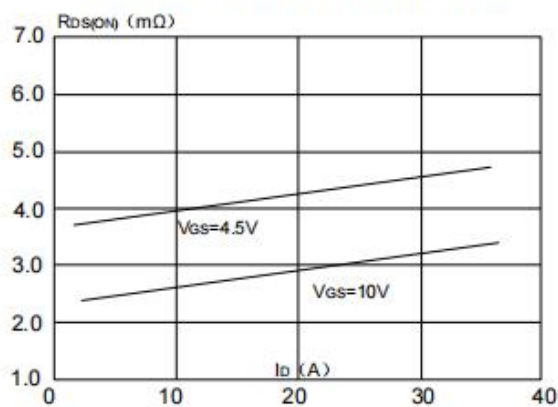


Fig4 Gate Charge Waveform

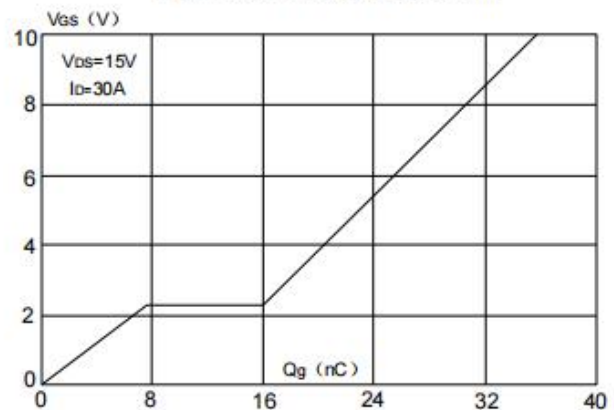


Fig5 Capacitance Characteristics

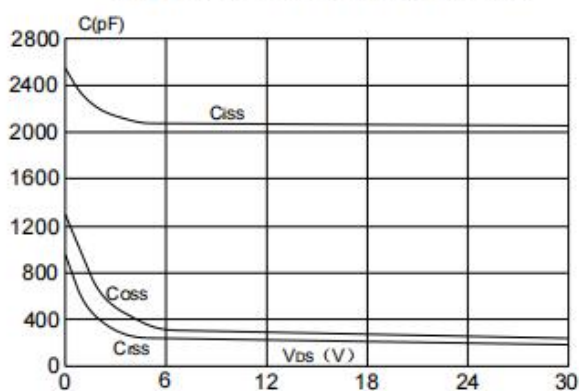


Fig6 Normalized Breakdown Voltage vs. T_J

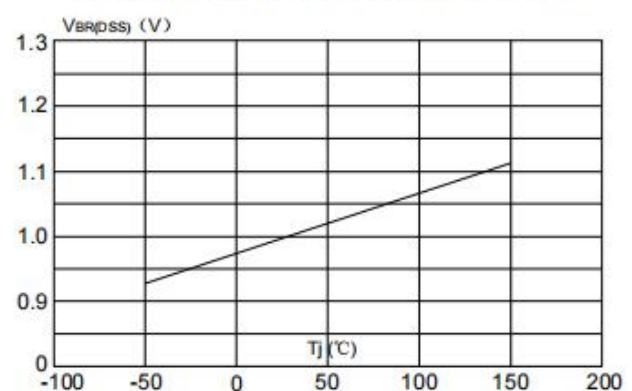


Fig7 Normalized Transient Impedance

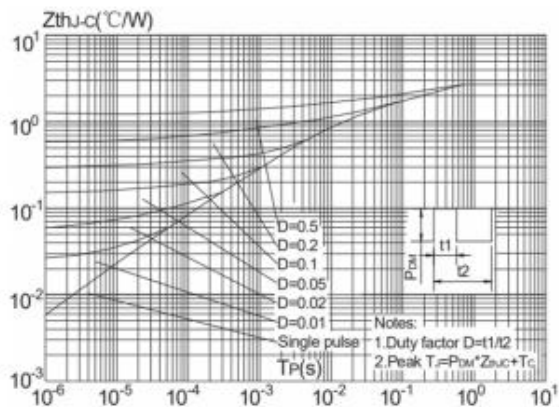


Fig8 Maximum Safe Operation Area

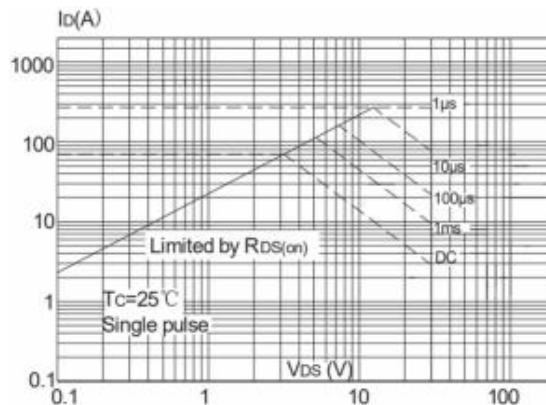


Fig9 Switching Time Waveform

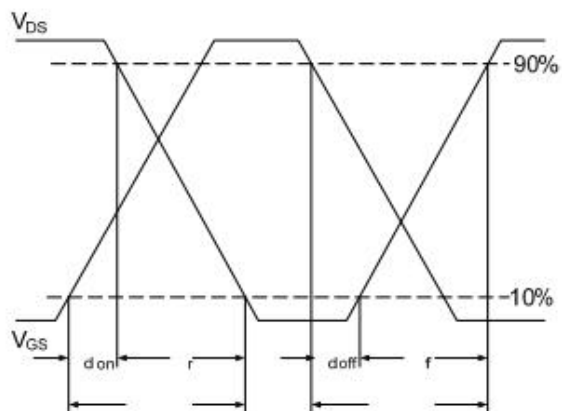
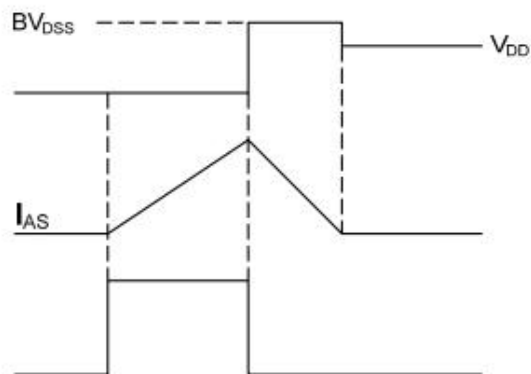
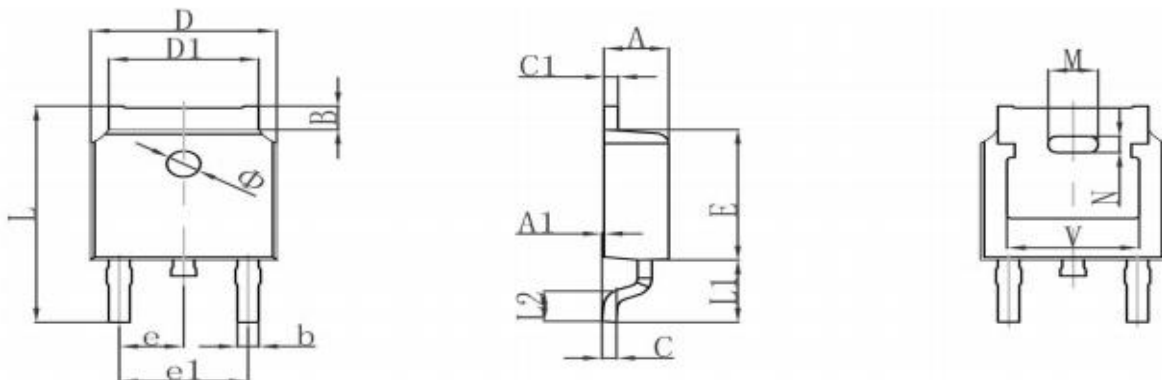


Fig10 EAS Waveform



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