

FEATURES

- $V_{DS} = -100V$, $I_D = -30A$
- $R_{DS(ON)} = 40m\Omega @ V_{GS} = -10V$

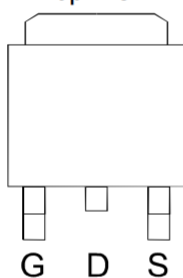
Features and Benefits:

- Advanced MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- $150^\circ C$ operating temperature

Package and Pin Configuration

(TO-252-3L)

Top View



P-Channel MOSFET

Marking: U30P10

Absolute Maximum Ratings ($T_A = 25^\circ C$ unless otherwise noted)

Symbol	Parameter	Max.	Units
$I_D @ T_C = 25^\circ C$	Continuous Drain Current, $V_{GS} @ -10V$ ①	-30	A
I_{DM}	Pulsed Drain Current ②	-120	
$P_D @ T_C = 25^\circ C$	Power Dissipation ③	102	W
	Linear Derating Factor	0.82	W/ $^\circ C$
V_{DS}	Drain-Source Voltage	-100	V
V_{GS}	Gate-to-Source Voltage	± 30	V
E_{AS}	Single Pulse Avalanche Energy @ $L = 0.1mH$	106	mJ
I_{AS}	Avalanche Current @ $L = 0.1mH$	46	A
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ C$

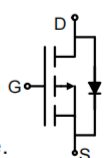
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case ^③	—	1.22	°C/W
$R_{\theta JA}$	Junction-to-ambient ($t \leq 10s$) ^④	—	6.2	°C/W

Electrical Characterizes @ $T_A=25^\circ\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	-100	—	—	V	$V_{GS} = 0V, I_D = -250\mu A$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	40	53	mΩ	$V_{GS}=-10V, I_D=-15A$
		—	45	65		$V_{GS}=-4.5V, I_D=-10A$
$V_{GS(th)}$	Gate threshold voltage	-1	—	-3	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
I_{DSS}	Drain-to-Source leakage current	—	—	-1	μA	$V_{DS} = -100V, V_{GS} = 0V$
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS} = 30V$
		—	—	-100		$V_{GS} = -30V$
Q_g	Total gate charge	—	90	—	nC	$I_D = -10A,$ $V_{DS}=-50V,$ $V_{GS} = -10V$
Q_{gs}	Gate-to-Source charge	—	15	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	11	—		
$t_{d(on)}$	Turn-on delay time	—	55	—	ns	$V_{GS}=-10V, V_{DS}=-50V,$ $R_{GEN}=25\Omega$ $I_D=-5A$
t_r	Rise time	—	20	—		
$t_{d(off)}$	Turn-Off delay time	—	210	—		
t_f	Fall time	—	90	—		
C_{iss}	Input capacitance	—	7800	—	pF	$V_{GS} = 0V$ $V_{DS} = -25V$ $f = 1MHz$
C_{oss}	Output capacitance	—	222	—		
C_{rss}	Reverse transfer capacitance	—	165	—		

Source-Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	-30	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	-60	A	
V_{SD}	Diode Forward Voltage	—	—	-1.2	V	

Typical Characteristics (T_J = 25°C Noted)

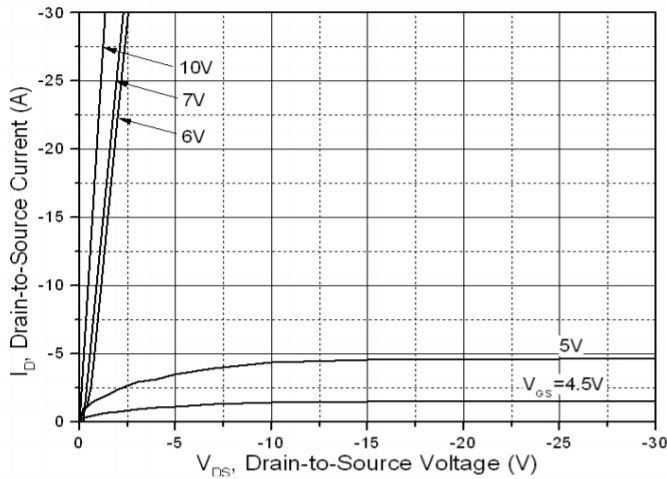


Figure 1: Typical Output Characteristics

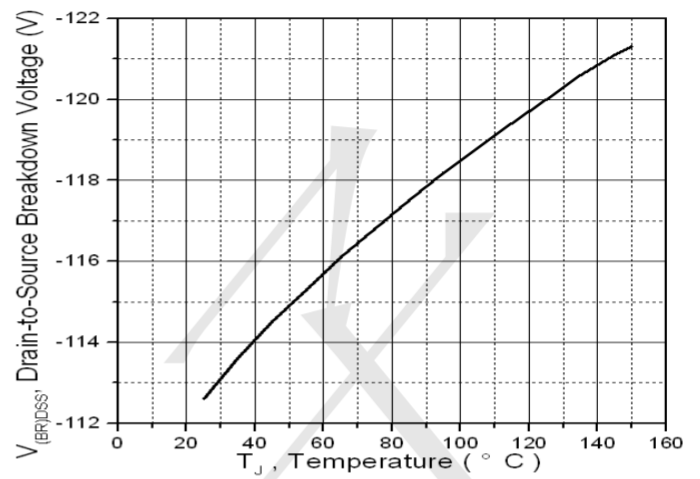


Figure 2: Drain-to-Source Breakdown Voltage vs. Temperature

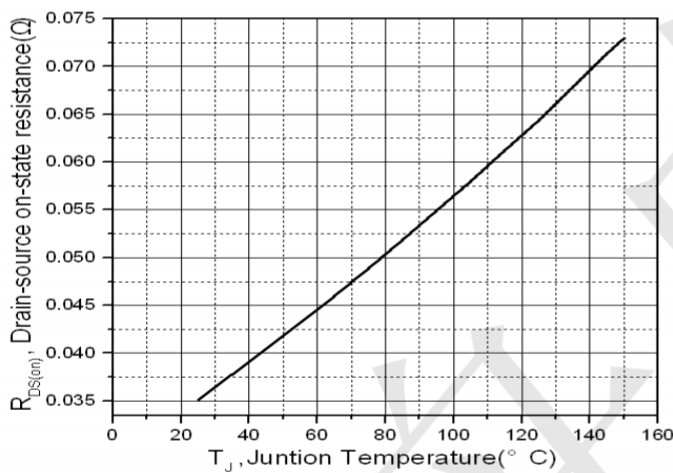


Figure 3: Normalized On-Resistance Vs. Case Temperature

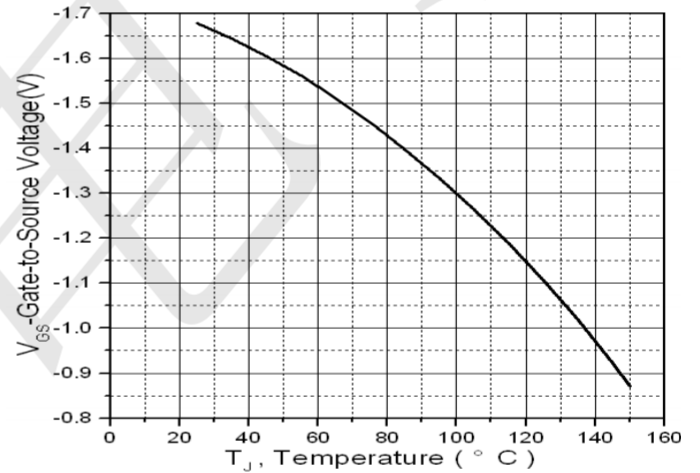


Figure 4: Gate to source cut-off voltage

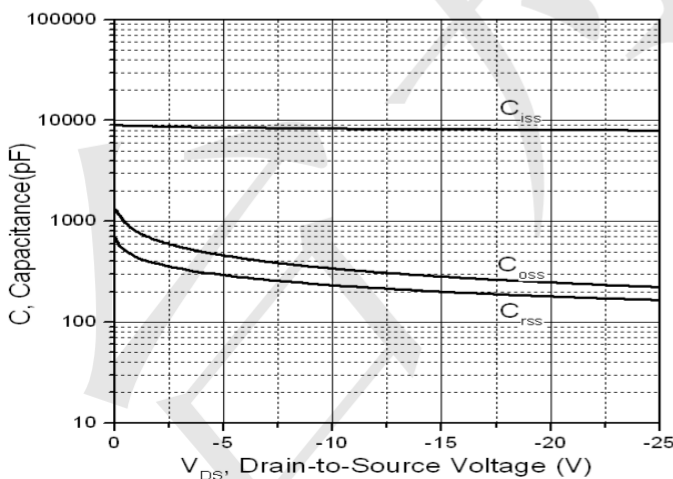


Figure 5: Typical Capacitance Vs. Drain-to-Source Voltage

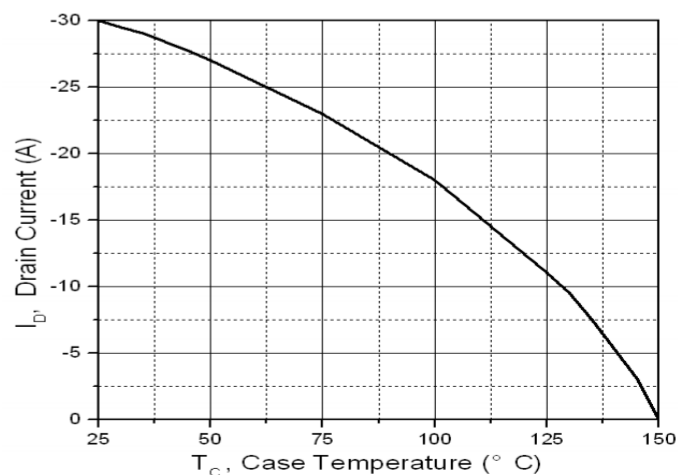
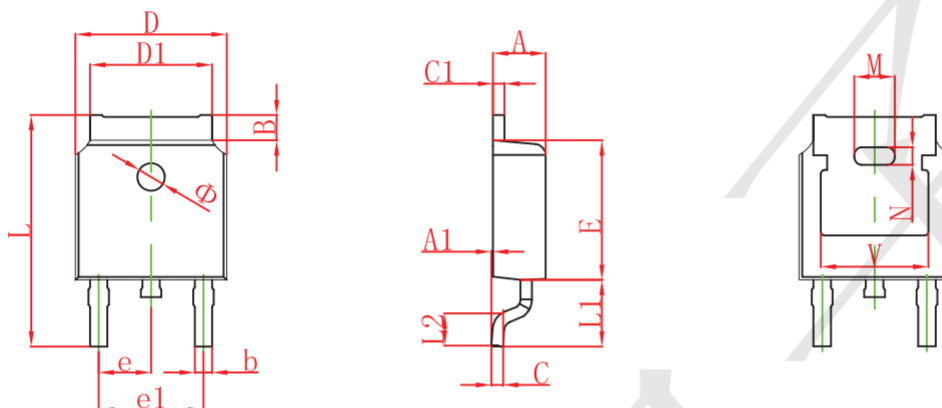


Figure 6: Maximum Drain Current Vs.

TO252 Package Information



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	2.286 TYP.		0.090 TYP.	
e1	4.327	4.727	0.170	0.186
M	1.778 REF.		0.070 REF.	
N	0.762 REF.		0.018 REF.	
L	9.800	10.400	0.386	0.409
L1	2.9 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
V	4.830 REF.		0.190 REF.	
Φ	1.100	1.300	0.043	0.051