RoHS Pb-Free HF

Features

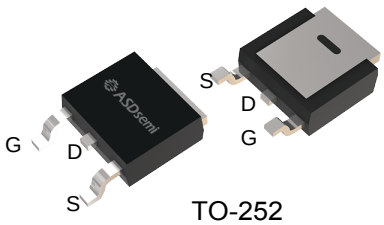
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

Applications

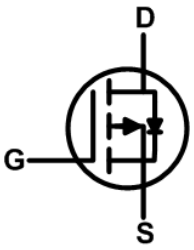
- Load switch
- PWM application

Product Summary

V_{DS}	-60	V
$R_{DS(on),Typ.}$@VGS=10V	63	mΩ
ID	-12	A



TO-252



P-channel

Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
ASDM60P12KQ-R	60P12	TO-252	Tape&Reel	2500/ Reel

Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	-12	A
Pulsed Drain Current	I_{DM}	-48	A
Maximum Power Dissipation	P_D	50	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 175	℃

Thermal Characteristics

Parameter	Symbol	Limit	Units
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.0	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	50	°C/W

Electrical Characteristics (T_C=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=-250μA	-60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-60V,V_{GS}=0V	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-1.0	1.9	-2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-8A	-	63	70	mΩ
		V_{GS}=-4.5V, I_D=-3A	-	80	90	mΩ
Forward Transconductance	g_{FS}	V_{DS}=-5V,I_D=-14A	-	10	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=-30V,V_{GS}=0V, F=1.0MHz	-	968	-	PF
Output Capacitance	C_{oss}		-	88	-	PF
Reverse Transfer Capacitance	C_{rss}		-	36	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-30V, R_L=2Ω, V_{GS}=-10V,R_G=3Ω	-	8	-	nS
Turn-on Rise Time	t_r		-	4	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	32	-	nS
Turn-Off Fall Time	t_f		-	7	-	nS
Total Gate Charge	Q_g	V_{DS}=-30,I_D=-14A, V_{GS}=-10V	-	25	-	nC
Gate-Source Charge	Q_{gs}		-	3	-	nC
Gate-Drain Charge	Q_{gd}		-	7	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=-14A	-		-1.2	V
Diode Forward Current (Note 2)	I_S		-	-	-12	A
Reverse Recovery Time	t_{rr}	T_J = 25°C, I_F =- 14A di/dt = -100A/μs (Note3)	-	25		nS
Reverse Recovery Charge	Qrr		-	31		nC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

Typical Performance Characteristics

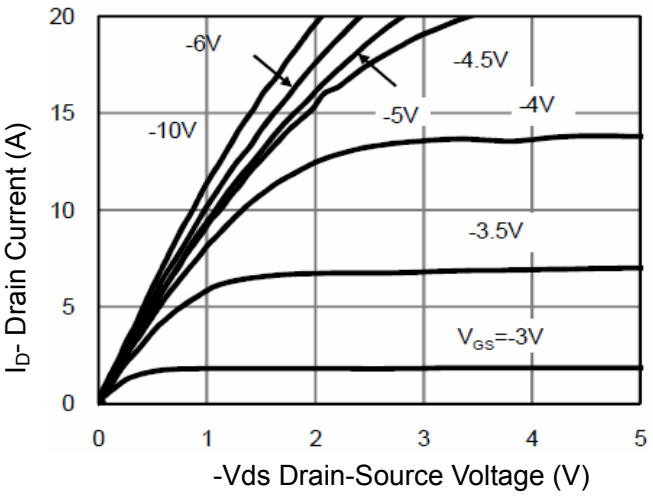


Figure 1 Output Characteristics

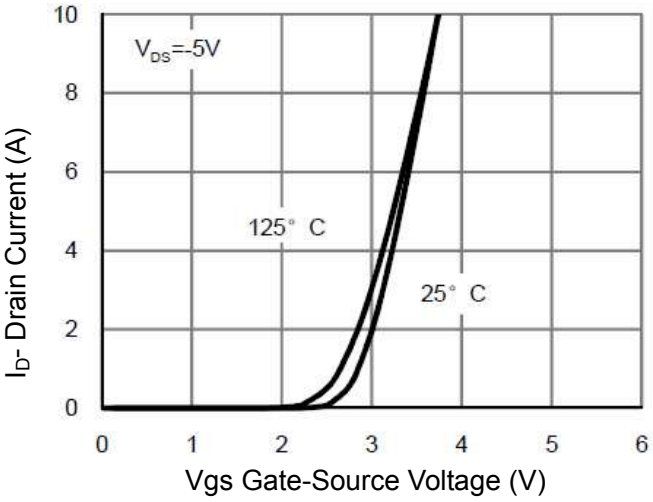


Figure 2 Transfer Characteristics

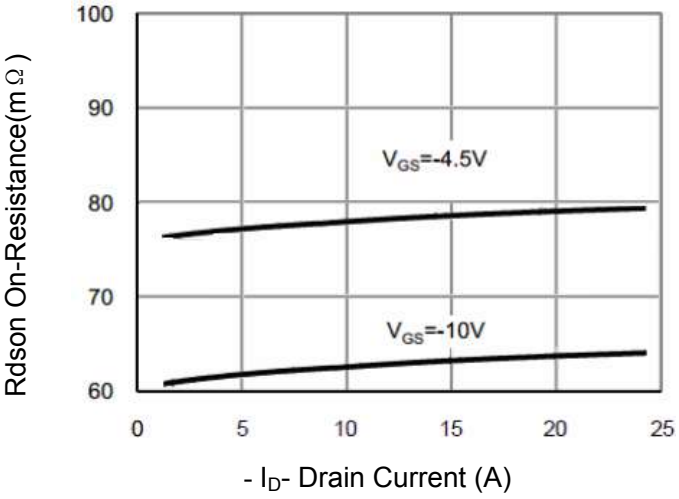


Figure 3 Rdson- Drain Current

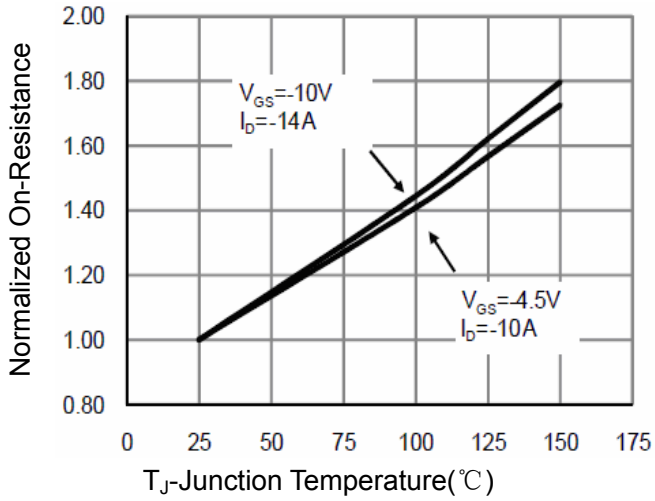


Figure 4 Rdson-Junction Temperature

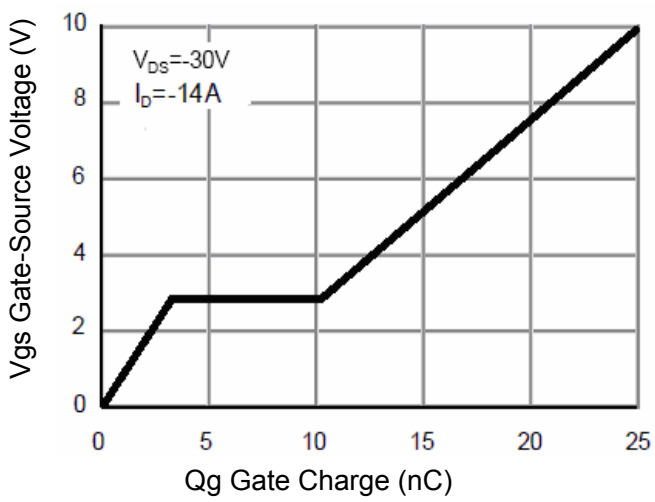


Figure 5 Gate Charge

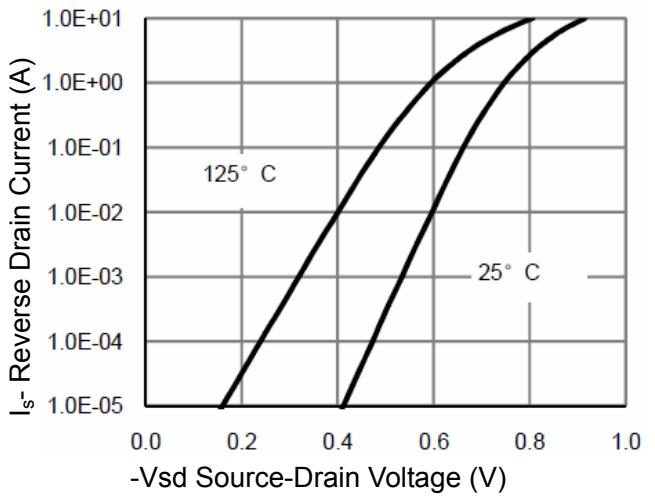


Figure 6 Source- Drain Diode Forward

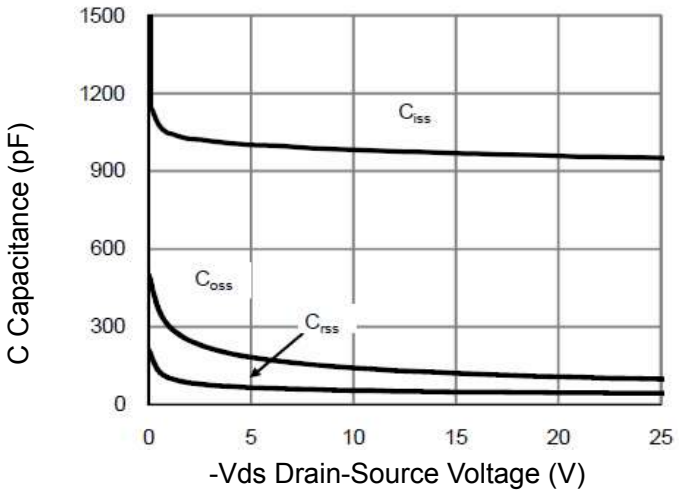


Figure 7 Capacitance vs Vds

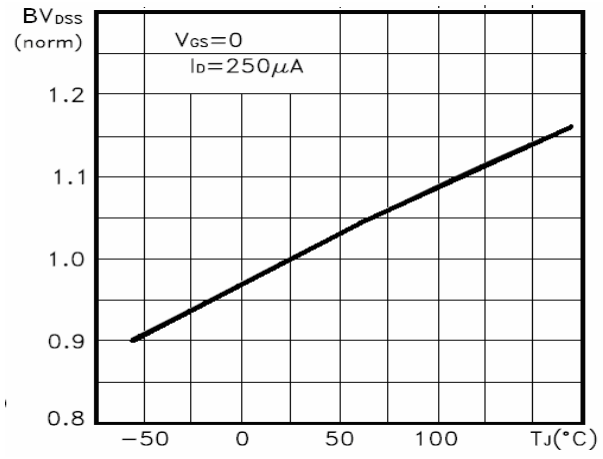


Figure 9 BV_{DSS} vs Junction Temperature

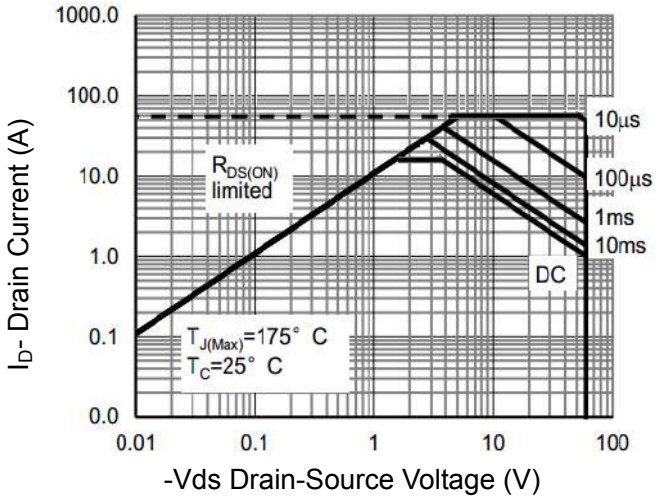


Figure 8 Safe Operation Area

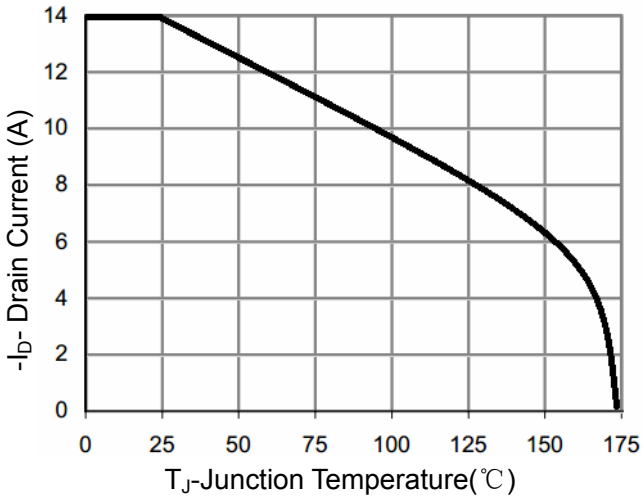


Figure 10 ID Current De-rating

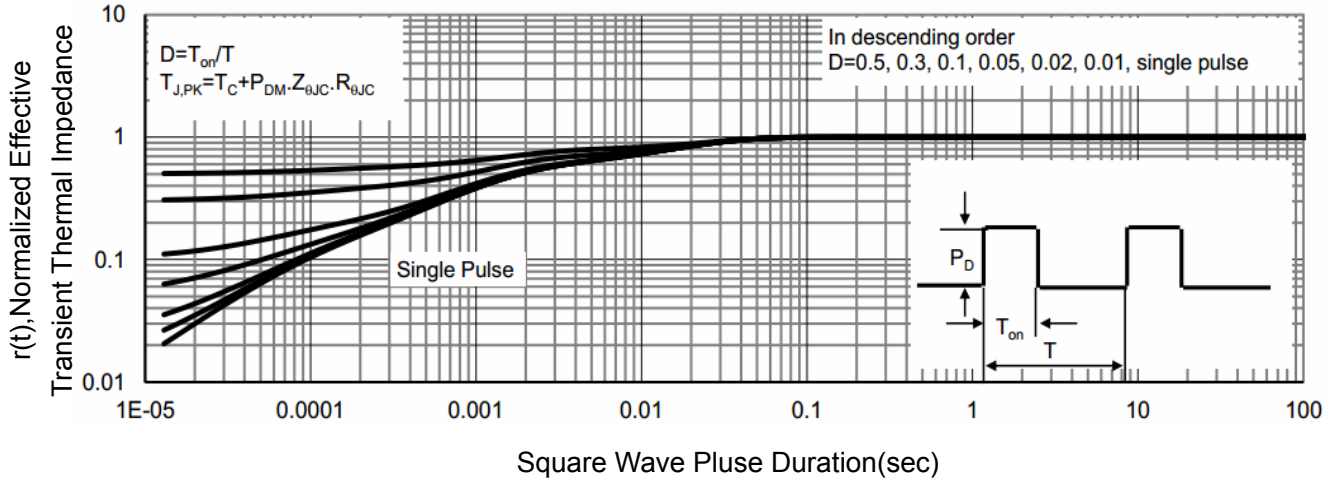
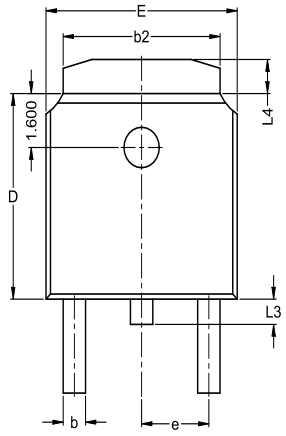
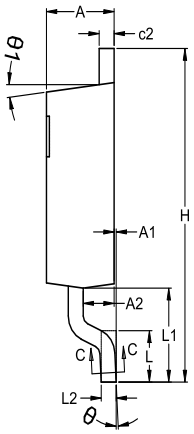


Figure 11 Normalized Maximum Transient Thermal Impedance

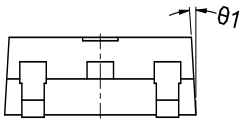
TO-252



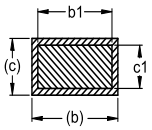
TOP VIEW



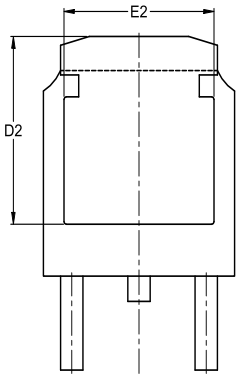
SIDE VIEW(Right)



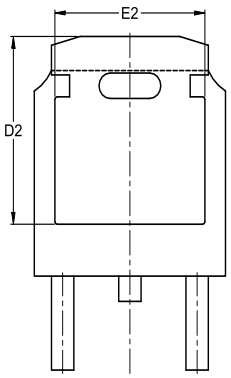
SIDE VIEW(Front)



SECTION:C-C



OPTION 1
BOTTOM VIEW



OPTION 2
BOTTOM VIEW

DIM / SYMBOL	MIN.	NOM.	MAX.
A	2.200	2.300	2.400
A1	0.000	0.070	0.130
A2	0.950	1.050	1.150
b	0.700	0.800	0.900
b1	0.660	0.760	0.860
b2	5.134	5.334	5.534
c	0.448	0.548	0.648
c1	0.458	0.508	0.558
c2	0.448	0.548	0.648
D	6.000	6.100	6.200
D2	5.372	5.572	5.772
E	6.400	6.500	6.600
E2	4.900	5.100	5.300
e	2.286 BSC.		
H	9.700	9.900	10.100
L	1.380	1.525	1.725
L1	2.588	2.788	2.988
L2	0.508 BSC.		
L3	0.600	0.750	0.950
L4	0.812	1.012	1.212
θ	1°	3°	5°
θ1	6°	7°	8°

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