

Features ➤ Super Low Gate Charge ➤ Green Device Available ➤ Excellent CdV/dt effect decline ➤ Advanced high cell density Trench technology	Bvdss	Rdson	ID
	60V	78mΩ	3A
	Application ➤ Battery protection ➤ Load Switch ➤ Uninterruptible power supply		

RoHS

| **Package** Marking and pin assignment SOT23-3L top view Schematic diagram | | | |

Package Marking and Ordering Information

Device Marking	Device	Device Package	Quantity
ARDP	3422	SOT23-3L	3000

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, $V_{GS} @ 10V^1$	$I_D @ T_A=25^{\circ}\text{C}$	3.0	A
Continuous Drain Current, $V_{GS} @ 10V^1$	$I_D @ T_A=70^{\circ}\text{C}$	1.8	A
Pulsed Drain Current ²	I_{DM}	9.2	A
Total Power Dissipation ³	$P_D @ T_A=25^{\circ}\text{C}$	1	W
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}\text{C}$
Operating Junction Temperature Range	T_J	-55 to 150	$^{\circ}\text{C}$

Thermal Resistance Ratings

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	--	125	$^{\circ}\text{C/W}$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	--	80	$^{\circ}\text{C/W}$



Ordering Information

Ordering Number	Package	Pin Assignment			Packing
Halogen Free		G	S	D	
HL3422	SOT23-3L	1	2	3	Tape Reel

Electrical Characteristics (T_J=25°C unless otherwise specified noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	V _{GS} =0V, I _D =250μA	60	-	-	V
BV _{DSS} Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_J$	Reference to 25°C, I _D =1mA	-	0.054	-	V/°C
Static Drain-Source On-Resistance ²	R _{DS(ON)}	V _{GS} =10V, I _D =2A		78	105	mΩ
		V _{GS} =4.5V, I _D =1A		85	110	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	-	2.5	V
V _{GS(th)} Temperature Coefficient	$\Delta V_{GS(th)}$		-	-4.96	-	mV/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =48V, V _{GS} =0V, T _J =25°C	-	-	1	μA
		V _{DS} =48V, V _{GS} =0V, T _J =55°C	-	-	5	
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Forward Trans conductance	g _{fs}	V _{DS} =5V, I _D =2A	-	13	-	S
Total Gate Charge (4.5V)	Q _g	V _{DS} =48V, I _D =2A, V _{GS} =4.5V	-	5	7	nC
Gate-Source Charge	Q _{gs}		-	1.68	2.4	
Gate-Drain Charge	Q _{gd}		-	1.9	2.7	
Turn-on Delay Time	T _{d(on)}	V _{DD} =30V, I _D =2A, R _G =3.3Ω, V _{GS} =10V	-	1.6	3.2	nS
Rise Time	T _r		-	7.2	13	
Turn-Off Delay Time	T _{d(off)}		-	25	50	
Fall Time	T _f		-	14.4	28.8	
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz	-	511	715	pF
Output Capacitance	C _{oss}		-	38	53	
Reverse Transfer Capacitance	C _{rss}		-	25	35	
Continuous Source Current ^{1,4}	I _S	V _G =V _D =0V, Force Current	-	-	3	A
Pulsed Source Current ^{2,4}	I _{SM}		-	-	9.2	A
Diode Forward Voltage ²	V _{SD}	V _{GS} =0V, I _S =1A, T _J =25°C	-	-	1.2	V
Reverse Recovery Time	t _{rr}	I _F =2A, dI/dt=100A/μs, T _J =25°C	-	9.7	-	nS
Reverse Recovery Charge	Q _{rr}		-	5.8	-	nC

Notes:

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2.The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3.The power dissipation is limited by 150°C junction temperature.
- 4.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

Figure 1: Typical Output Characteristics

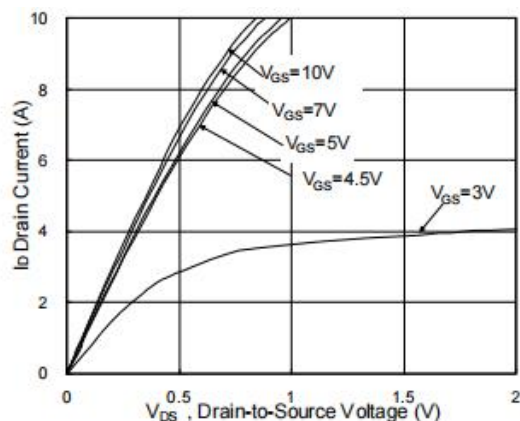


Figure 2: On-Resistance v.s Gate-Sources

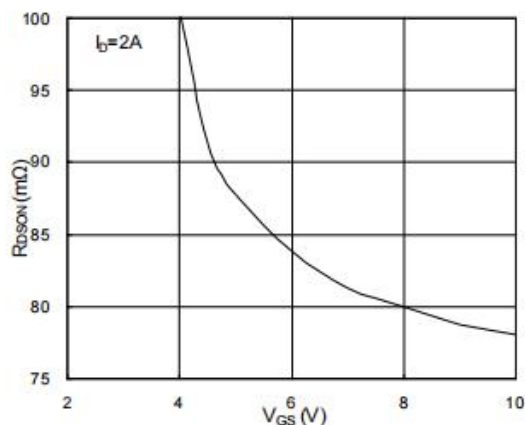


Figure 3: Forward Characteristics of Reverse

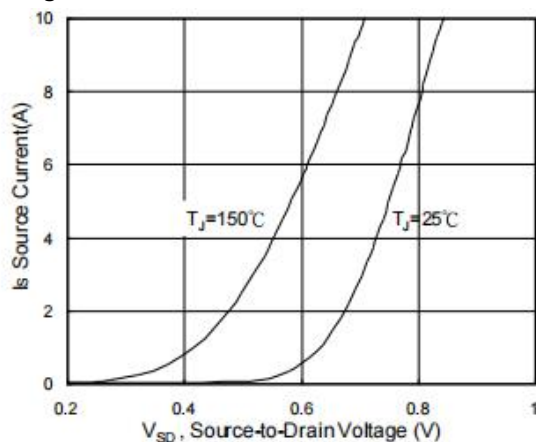


Figure 4: Gate-Charge Characteristics

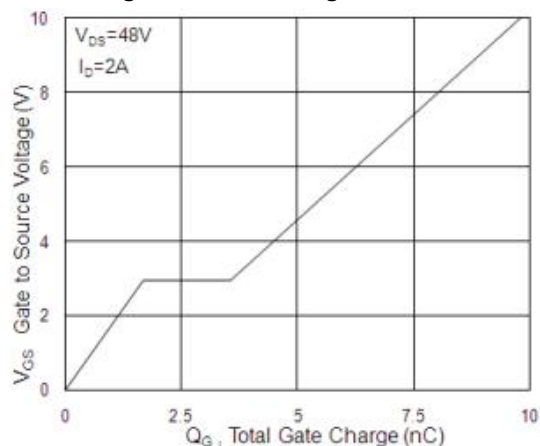


Figure 5: Normalized $V_{GS(th)}$ v.s T_J

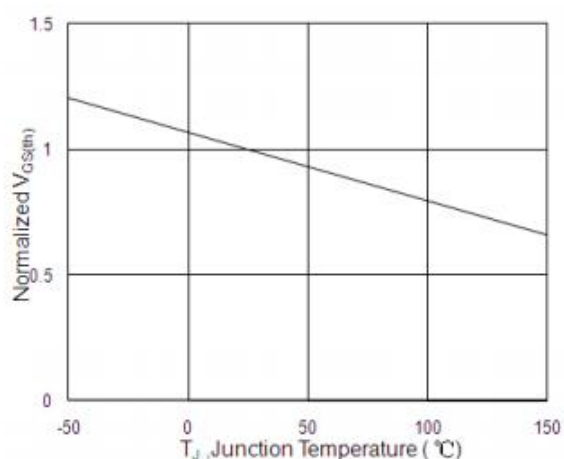


Figure 6: Normalized $R_{DS(on)}$ v.s T_J

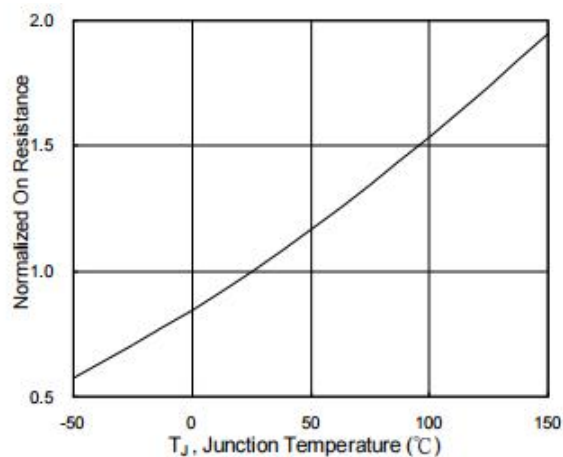


Figure 7: Capacitance Characteristics

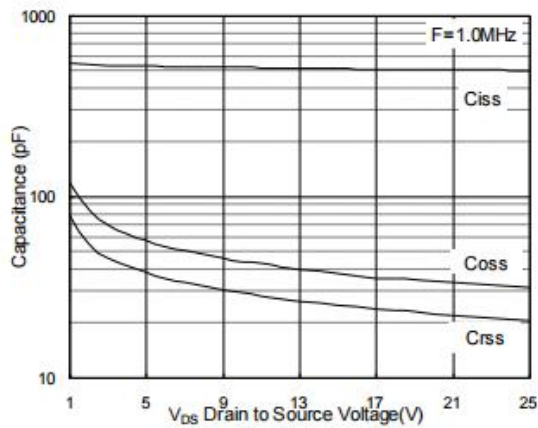


Figure 8: Safe Operating Area

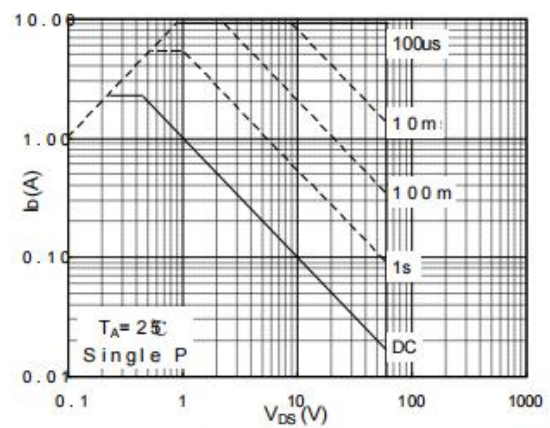


Fig9: Normalized Maximum Transient Thermal Impedance

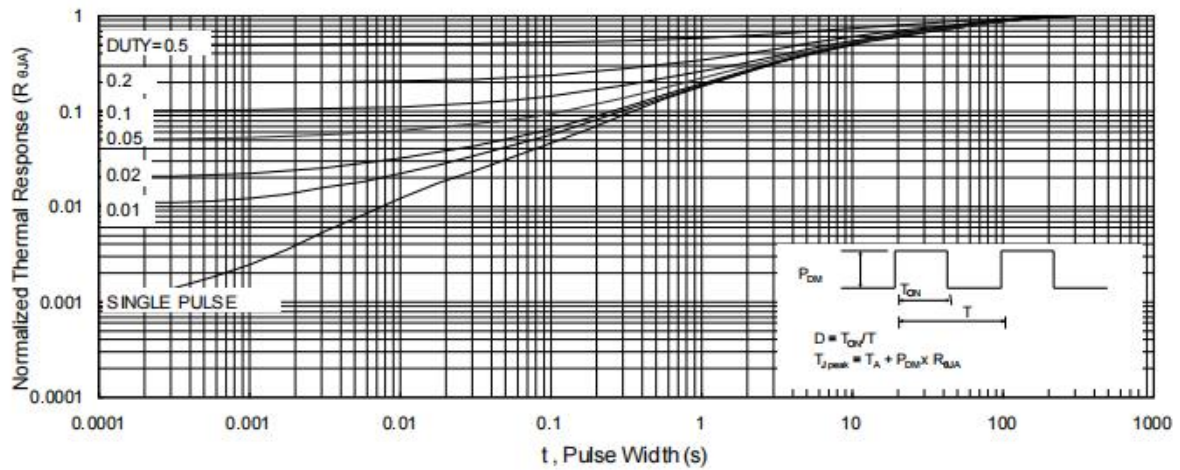


Figure 10: Switching Time Waveform

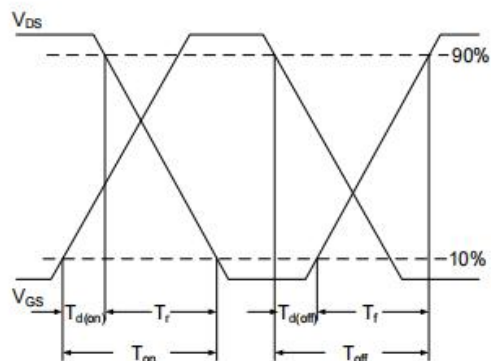
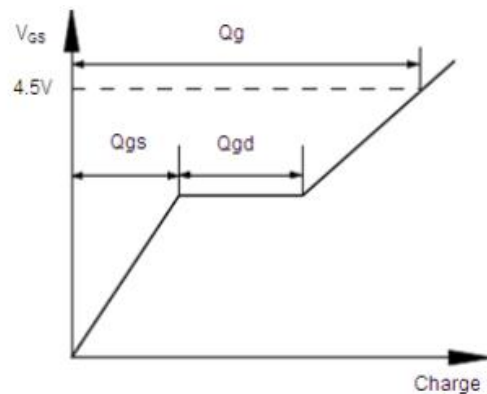
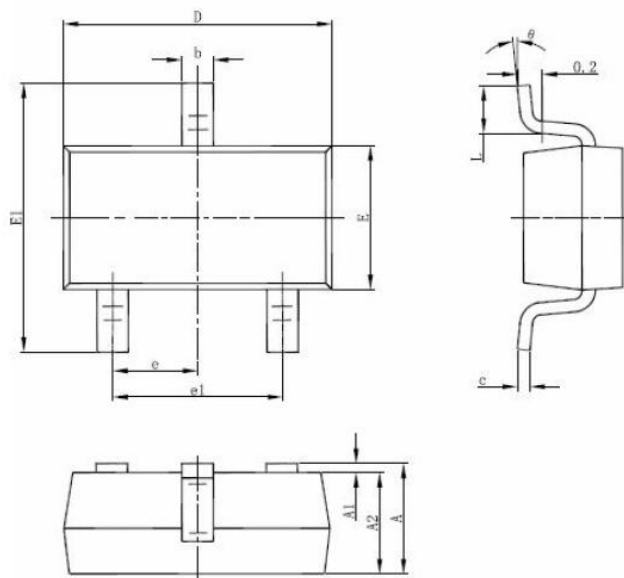


Figure 11: Gate Charge Waveform



Package Dimensions SOT23-3L


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°



Important Notice and Disclaimer

HL Microelectronics reserves the right to make changes to this document and its products and specifications at any time without notice.

Customers should obtain and confirm the latest product information and specifications before final design, purchase or use.

HL Microelectronics makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, not does HL Microelectronics assume any liability for application assistance or customer product design.

HL Microelectronics does not warrant or accept any liability with products which are purchased or used for any unintended or unauthorized application.

No license is granted by implication or otherwise under any intellectual property rights of HL Microelectronics.

HL Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of HL Microelectronics.