

PRODUCT CHARACTERISTICS

V_{DS}	-20V
$R_{DS(ON)}$ Typ(@ $V_{GS}=-4.5V$)	95m Ω
$R_{DS(ON)}$ Typ(@ $V_{GS}=-2.5V$)	135m Ω
I_D	-3A

APPLICATIONS

- * High efficiency switch mode power supplies
- * Electronic lamp ballasts based on half bridge
- * LED power supplies

FEATURE

- * High Switching Speed
- * Improved dv/dt capability

ORDER INFORMATION

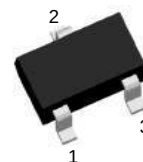
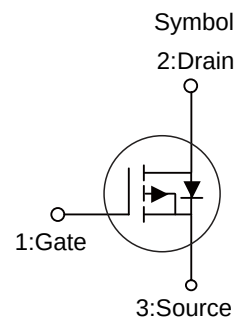
Order Codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT2301AA3	SOT-23A-3L	3000 pieces/Reel

ABSOLUTE MAXIMUM RATINGS($T_A=25^{\circ}C$, unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current Continuous(@ $V_{GS}=10V, T_A=25^{\circ}C$)	I_D	-3	A
Drain Current Pulsed	I_{DM}	-12	A
Power Dissipation	P_D	1.25	W
Junction Temperature	T_J	+150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}C$

THERMAL CHARACTERISTICS

Parameter	Symbol	Typ	Unit
Junction to Ambient	R_{thJA}	100	$^{\circ}C/W$



SOT-23



■ ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off characteristics						
Drain to Source Breakdown Voltage	V _{DSS}	V _{GS} =0V,I _D =-250μA	-20	-	-	V
Drain to Source Leakage Current	I _{DSS}	V _{DS} =-20V,V _{GS} =0V	-	-	-1	μA
Gate to Source Forward Leakage	I _{GSS(F)}	V _{GS} =+12V,V _{DS} =0V	-	-	100	nA
Gate to Source Reverse Leakage	I _{GSS(R)}	V _{GS} =-12V ,V _{DS} =0V	-	-	-100	nA
On characteristics						
Drain to Source On-Resistance	R _{DS(ON)}	V _{GS} =-4.5V,I _D =-3 A	-	95	110	mΩ
		V _{GS} =-2.5V,I _D =-2 A	-	135	150	mΩ
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} ,I _D =-250μA	-0.4	-0.61	-1.2	V
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =-10V,V _{GS} =0V f=1.0MHz	-	415	-	pF
Output Capacitance	C _{oss}		-	223	-	pF
Reverse Transfer Capacitance	C _{rss}		-	87	-	pF
Resistive Switching Characteristics						
Turn-on Delay Time	t _{d(ON)}	V _{GS} =-4.5V,V _{DS} =-10V, I _D =-2 A,R _G =6Ω	-	13	-	ns
Rise Time	t _r		-	36	-	ns
Turn-off Delay Time	t _{d(OFF)}		-	42	-	ns
Fall Time	t _f		-	34	-	ns
Total Gate Charge	Q _g	I _D =-2A, V _{DS} =-10V V _{GS} =-4.5V	-	5.8	-	nC
Gate to Source Charge	Q _{gs}		-	1	-	nC
Gate to Drain("Miller") Charge	Q _{gd}		-	2	-	nC
Source-Drain Diode Characteristics						
Continuous Source Current(Body Diode)	I _s		-	-	-3	A
Maximum Pulsed Current(Body Diode)	I _{SM}		-	-	-12	A
Diode Forward Voltage	V _{SD}	I _{SD} =-1A, V _{GS} =0V	-	-0.81	-1.2	V

■ TYPICAL CHARACTERISTICS

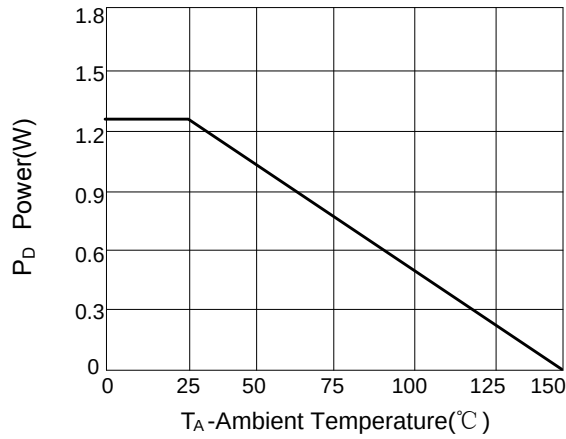


Figure 1: Power dissipation

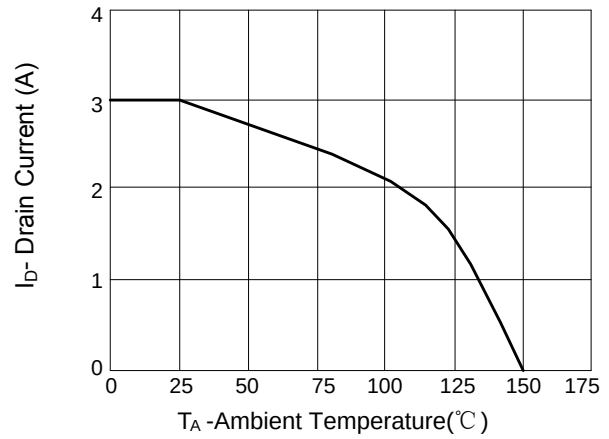


Figure 2: Drain current

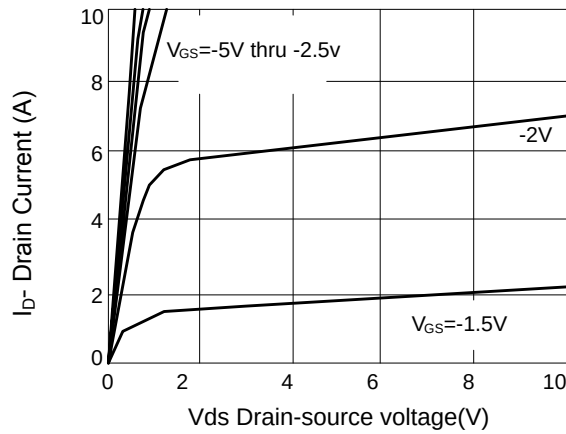


Figure 3: Output characteristics

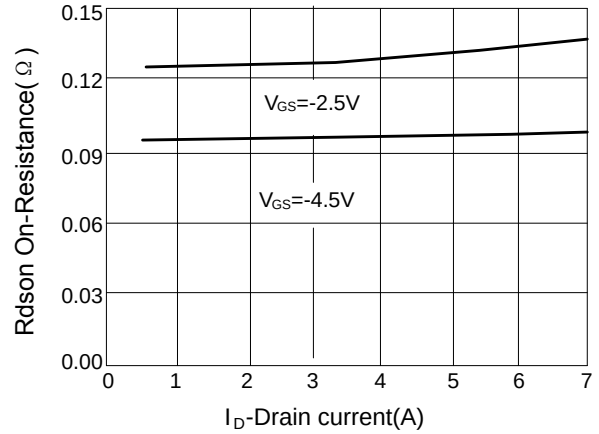


Figure 3: Output characteristics

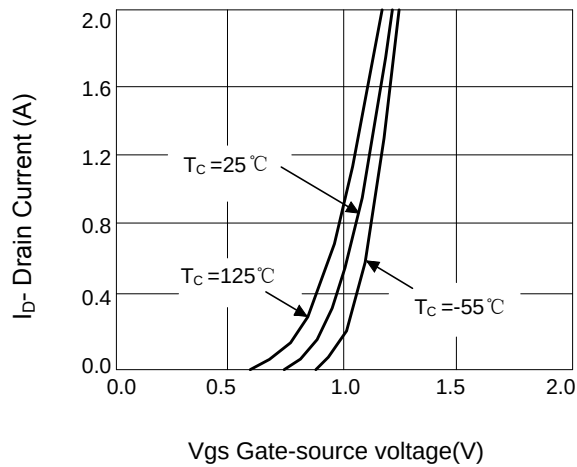


Figure 5: Transfer characteristics

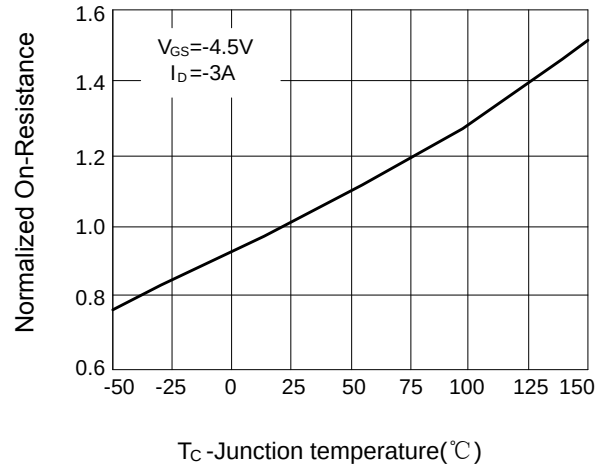


Figure 6: Drain-source on-resistance

■ TYPICAL CHARACTERISTICS(Cont.)

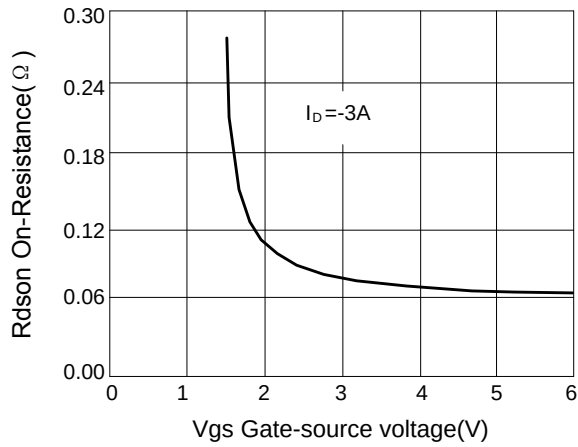


Figure 7: Rdson vs vgs

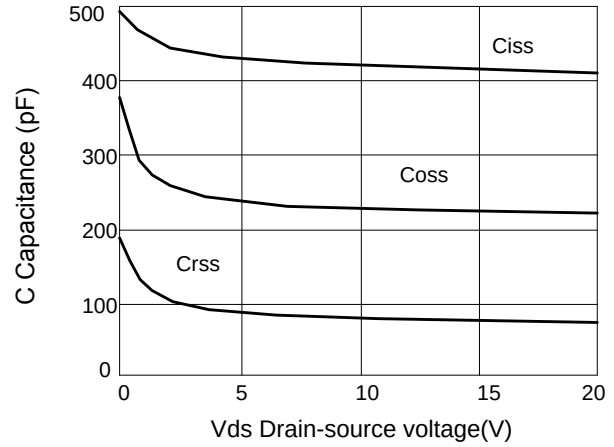


Figure 8: Capacitance vs vds

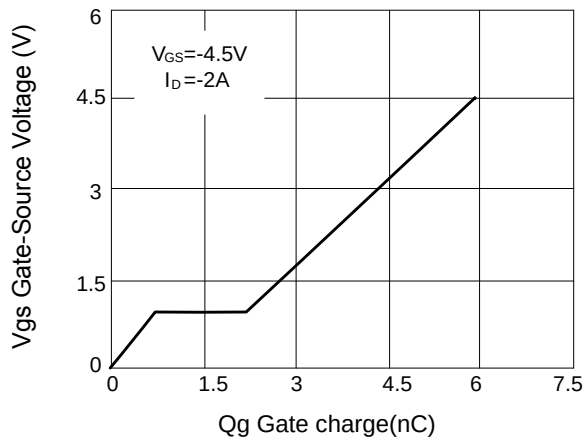


Figure 9: Gate charge

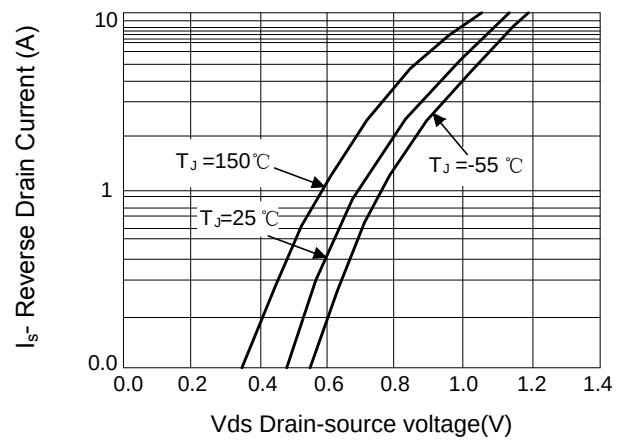


Figure 10: Source-drain diode forward

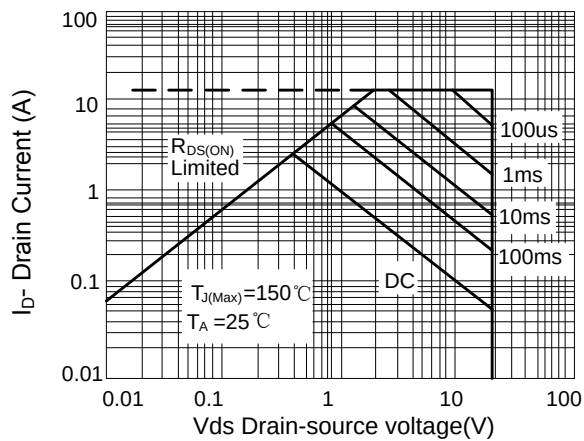
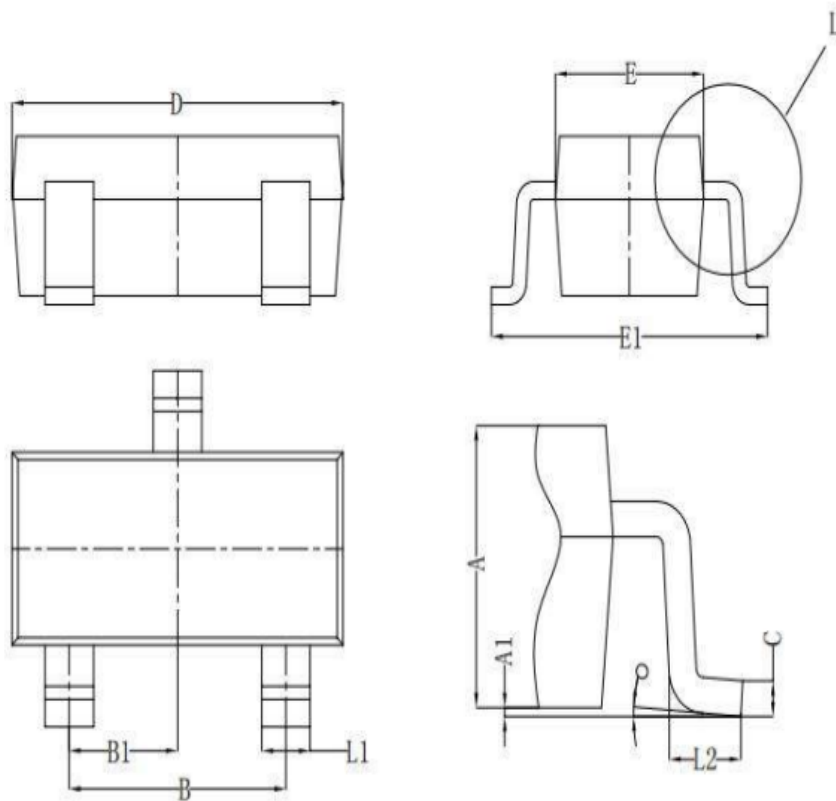


Figure 10: Source-drain diode forward

■ SOT-23A-3L PACKAGE OUTLINE DIMENSIONS



Symbol	Dim in mm		
	Min	Nor	Max
A	1.050	1.100	1.150
A1	0.000	0.050	0.100
L1	0.300	0.400	0.500
C	0.100	0.150	0.200
D	2.820	2.920	3.020
E	1.500	1.600	1.700
E1	2.650	2.800	2.950
B	1.800	1.900	2.000
B1	0.950 TYP		
L2	0.300	0.450	0.600
o	0°	4°	8°