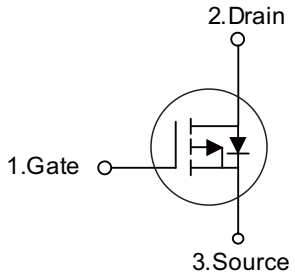
Symbol

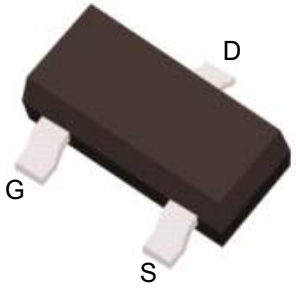
■ PRODUCT CHARACTERISTICS

VDSS	-20V
R_{DS} (on)max(V_{GS} @=-4.5 V)	32mΩ
R_{DS} (on)max(V_{GS} @=-2.5 V)	45mΩ
ID	-4.2A



■ APPLICATIONS

- Load switch for portable
- DC/DC converter



■ FEATURES

* High Density Cell Design For Ultra Low On-Resistance
* Advanced trench process technology

■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT2305A3	SOT-23A-3L	3000pieces/Reel

■ ABSOLUTE MAXIMUM RATINGS (T_A =25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATING	UNITS
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±8	V
Continuous Drain Current (Note 3) (T_A=25°C)	I_D	-4.2	A
Pulsed Drain Current	I_{DM}	-10	A
Power Dissipation	P_D	0.83	W
Junction Temperature	T_J	+150	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C

■ THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	θ_{JA}	150	°C/W

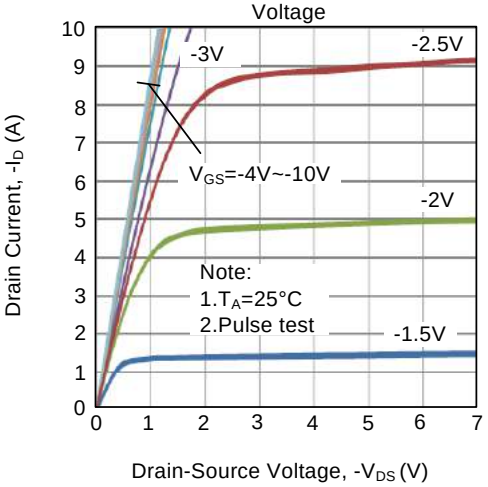
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Of characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-250μA	-20			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-20V, V_{GS}=0V			-1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±100	nA
On characteristics						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=-250uA	-0.45		-1.2	V
Drain-Source On-State Resistance (Note 2)	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-4.2A		32	45	mΩ
		V_{GS}=-2.5V, I_D=-3.4A		45	55	mΩ
Dynamic characteristics						
Input Capacitance	C_{ISS}	V_{GS}=0V, V_{DS}=-20V, f=1MHz		932		pF
Output Capacitance	C_{OSS}			100		pF
Reverse Transfer Capacitance	C_{RSS}			87		pF
Switching characteristics						
Total Gate Charge (Note 2)	Q_G	V_{DS}=-4V, V_{GS}=-4.5V, I_D=-3.5A		12.5		nC
Gate-Source Charge	Q_{GS}			2.5		nC
Gate-Drain Charge	Q_{GD}			1.8		nC
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	V_{DS}=-4V, V_{GS}=-4.5V, I_D=-1A, R_G=6Ω, R_D=4Ω		10		ns
Turn-ON Rise Time	t_R			39		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			42		ns
Turn-OFF Fall Time	t_F			28		ns
Source-drain diode ratings and characteristics						
Maximum Continuous Drain-Source Diode Forward Current	I_S				-4.2	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				-10	A
Drain-Source Diode Forward Voltage(Note2)	V_{SD}	V_{GS}=0V, I_S=-1.2A			-1.2	V

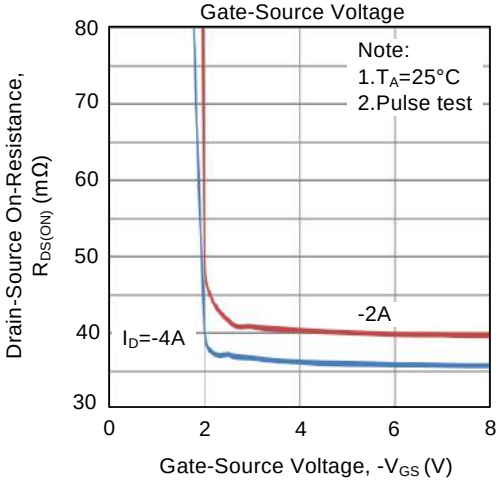
Notes: 1. Pulse width limited by $T_{J(MAX)}$
2. Pulse width ≤300μs, duty cycle≤2%.
3. Surface mounted on 1 in^2 copper pad of FR4 board; 270°C/W when mounted on min.

■ TYPICAL CHARACTERISTICS

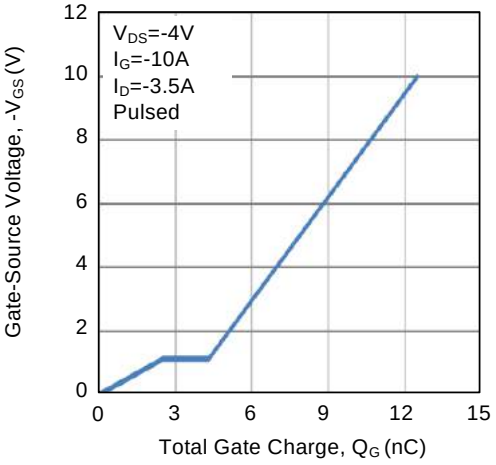
Drain Current vs. Drain-Source Voltage



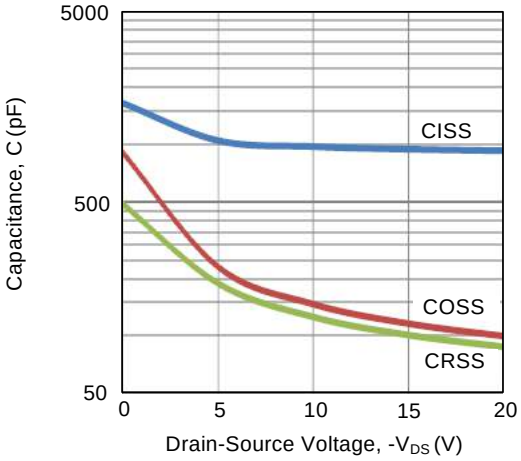
Drain-Source On-Resistance vs. Gate-Source Voltage



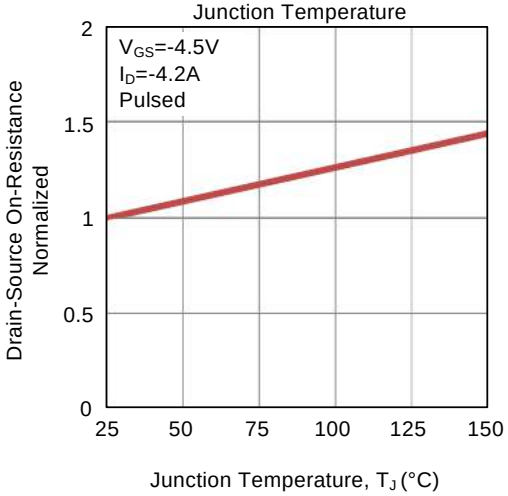
Gate Charge Characteristics



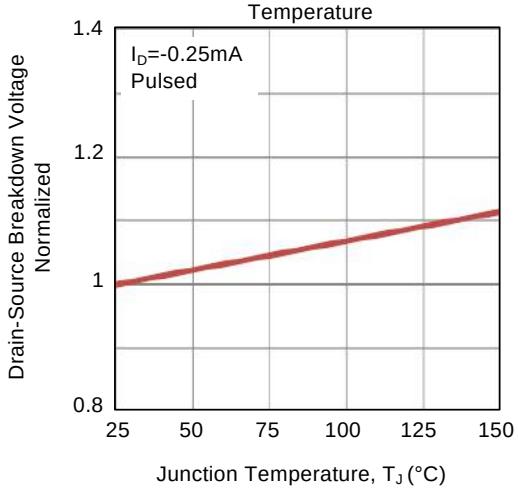
Capacitance Characteristics



Drain-Source On-Resistance vs. Junction Temperature

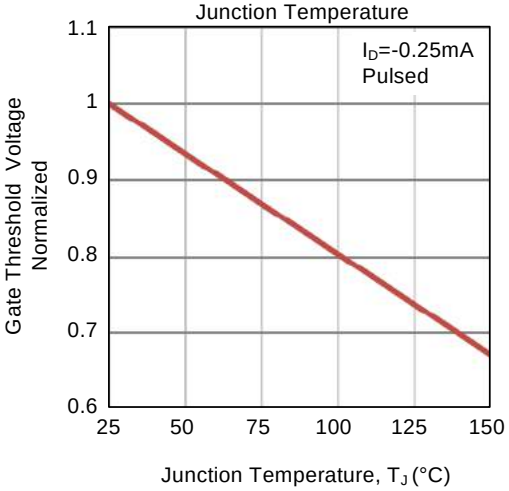


Breakdown Voltage vs. Junction Temperature

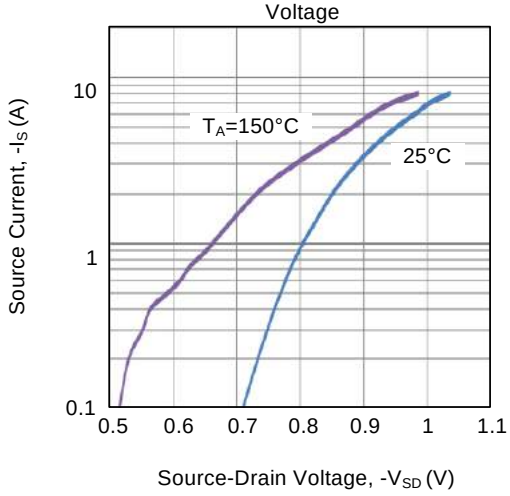


■ TYPICAL CHARACTERISTICS(Cont.)

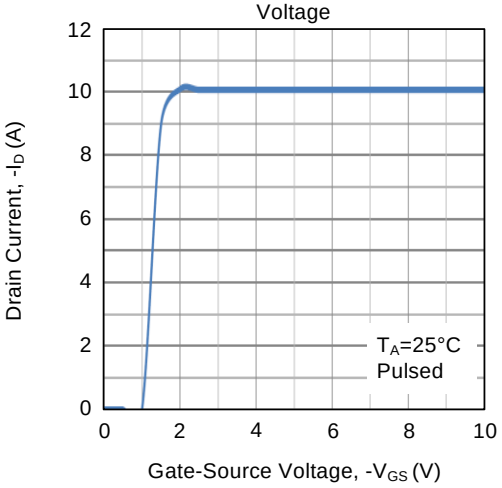
Gate Threshold Voltage vs. Junction Temperature



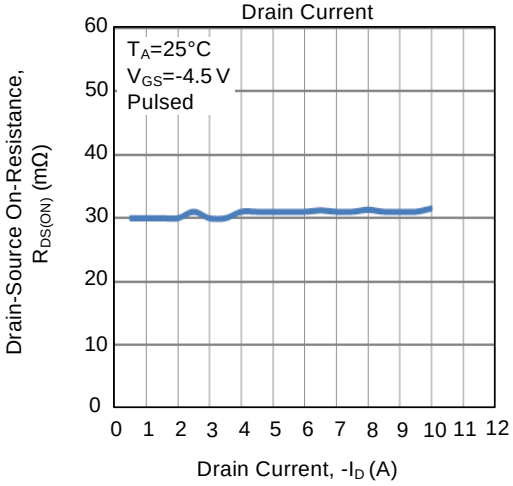
Source Current vs. Source-Drain Voltage



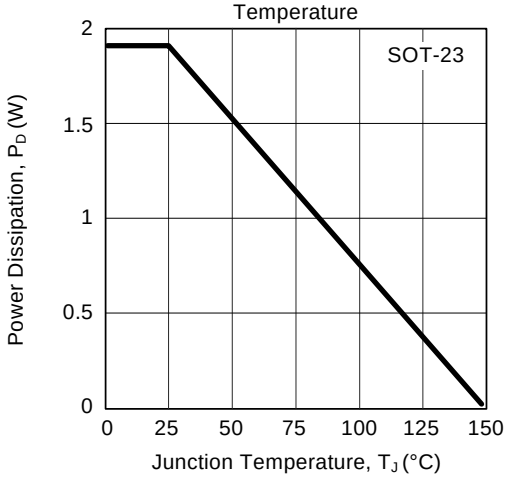
Drain Current vs. Gate-Source Voltage



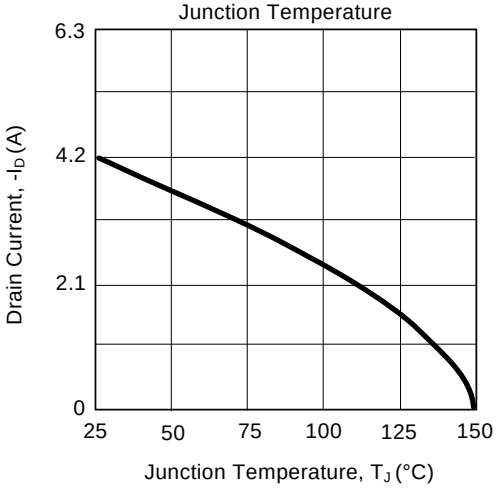
Drain-Source On-Resistance vs. Drain Current



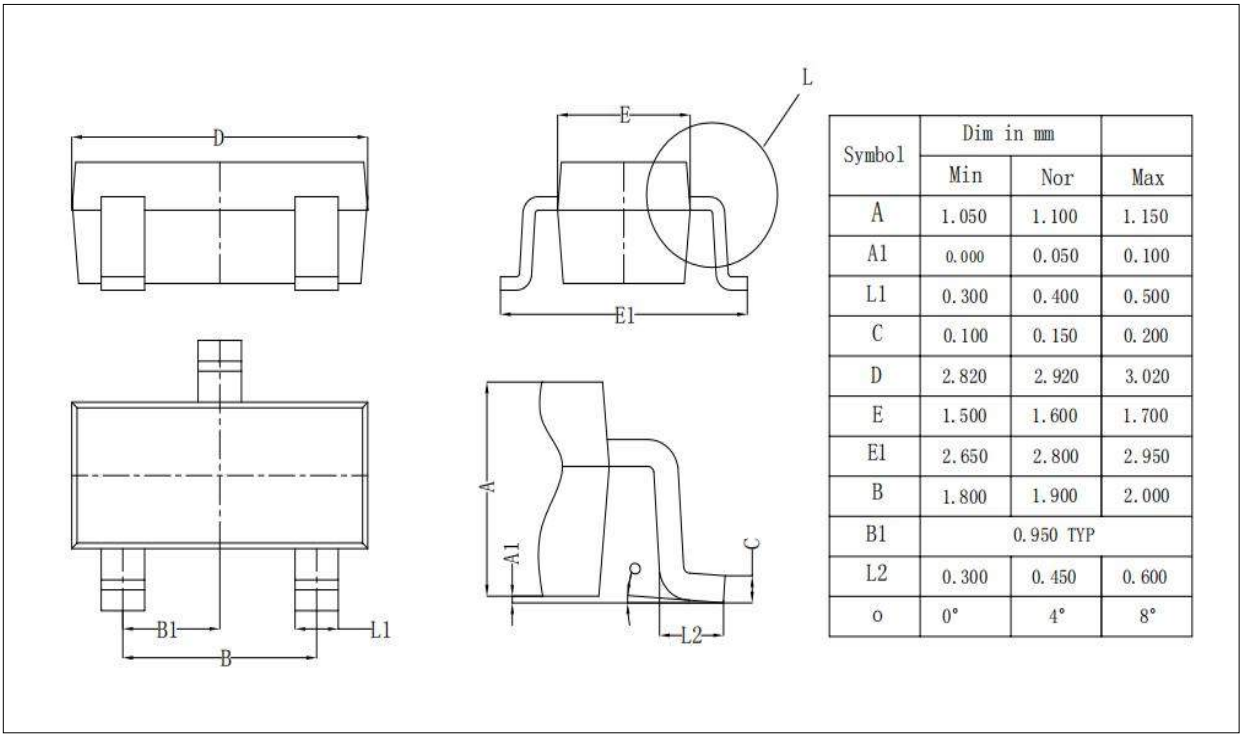
Power Dissipation vs. Junction Temperature



Drain Current vs. Junction Temperature



■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
θ	0°	4°	8°