

■ PRODUCT CHARACTERISTICS

VDSS	-20V
R _{DS(on)} Typ(@V _{GS} = -4.5 V)	60mΩ
R _{DS(on)} typ(@V _{GS} = -2.5 V)	75mΩ
ID	-3A

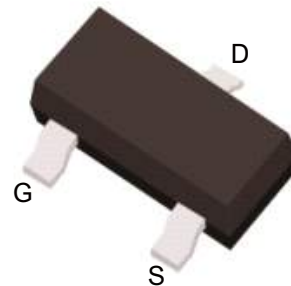
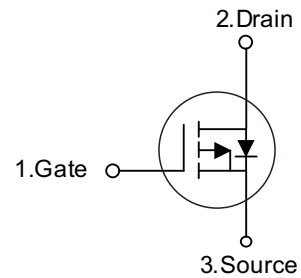
■ APPLICATIONS

- Load switch for portable
- DC/DC converter

■ FEATURES

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

Symbol



■ ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	MOT2301	SOT-23	3000pieces/Real

■ ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V _{DS}	-20	V	
Gate-Source Voltage	V _{GS}	±10	V	
Continuous Drain Current	I _D	-3	A	
Pulsed Drain Current	I _{DM}	-10	A	
Maximum Power Dissipation	P _D	TA = 25°	1.25	W
		TA = 75°C	0.8	W
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 150	°C	
Junction-to-Ambient Thermal Resistance (PCB mounted)	R _{thJA}	100	°C/W	
Junction-to-Ambient Thermal Resistance (PCB mounted)	R _{thJA}	166	°C/W	

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

Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = -250\mu A$	20	-	-	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -3.0A$	-	60	100	$m\Omega$
		$V_{GS} = -2.5V, I_D = -2.0A$	-	75	120	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	0.4	-	1	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -20V, V_{GS} = 0V$	-	-	-1	μA
		$V_{DS} = -16V, V_{GS} = 0V, T_J=55^\circ\text{C}$	-	-	-10	μA
Gate Body Leakage	I_{GSS}	$V_{GS} = \pm 10V, V_{DS} = 0V$	-	-	± 100	nA
Forward Transconductance	g_{fs}	$V_{DS} = -5V, I_D = -2.8A$	-	6.5	-	S
Dynamic						
Total Gate Charge	Q_g	$V_{DS} = -6V, I_D \cong -2.3A$ $V_{GS} = -4.5V$	-	5.8	-	nC
Gate-Source Charge	Q_{gs}		-	0.85	-	nC
Gate-Drain Charge	Q_{gd}		-	1.7	-	nC
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -6V, R_L=6\Omega$ $I_D \cong -1.A, V_{GEN} = -4.5V$ $R_G = 6\Omega$	-	13	-	ns
Turn-On Rise Time	t_r		-	36	-	ns
Turn-Off Delay Time	$t_{d(off)}$		-	42	-	ns
Turn-Off Fall Time	t_f		-	34	-	ns
Input Capacitance	C_{iss}	$V_{DS} = -6V, V_{GS} = 0V$ $f = 1.0\text{ MHz}$	-	415	-	pF
Output Capacitance	C_{oss}		-	223	-	pF
Reverse Transfer Capacitance	C_{rss}		-	87	-	pF
Source-Drain Diode						
Max. Diode Forward Current	I_S		-	-	-3.0	A
Diode Forward Voltage	V_{SD}	$I_S = -1.0A, V_{GS} = 0V$	-	-	-1.2	V

■ TYPICAL CHARACTERISTICS

Figure 1: Switching Test Circuit

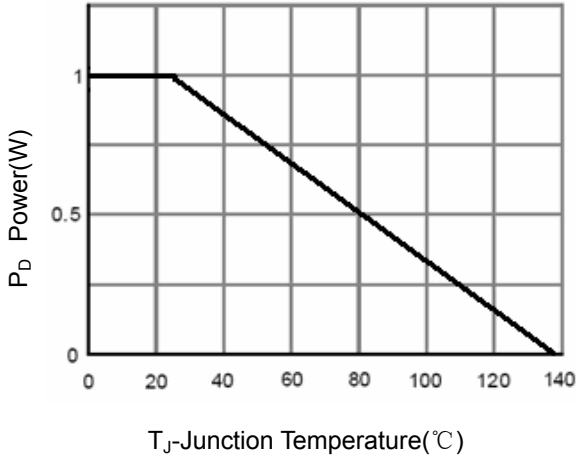


Figure 3 Power Dissipation

Figure 2: Switching Waveforms

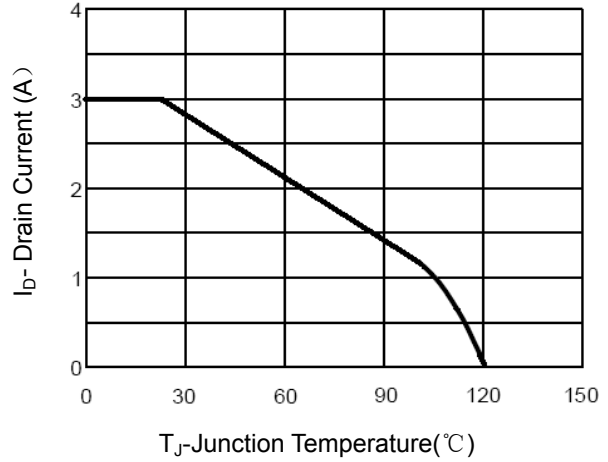


Figure 4 Drain Current

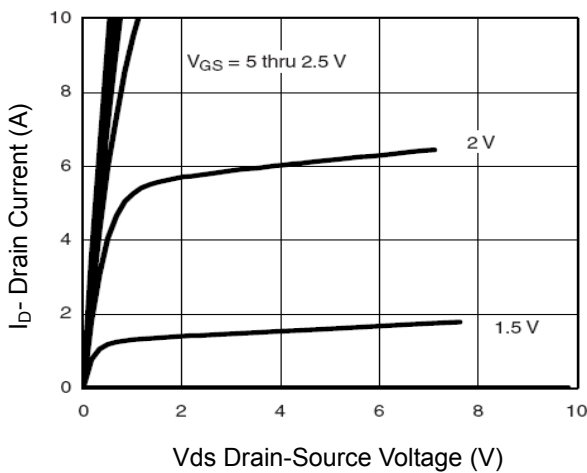


Figure 5 Output CHARACTERISTICS

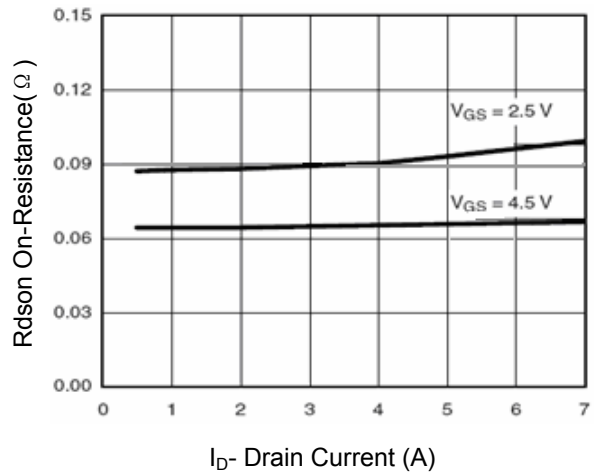


Figure 6 Drain-Source On-Resistance

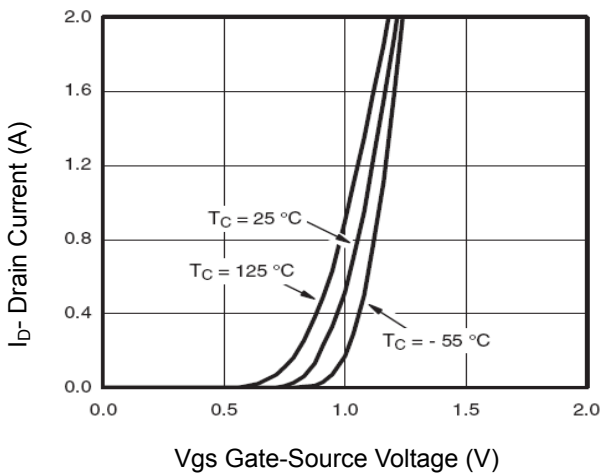


Figure 7 Transfer Characteristics

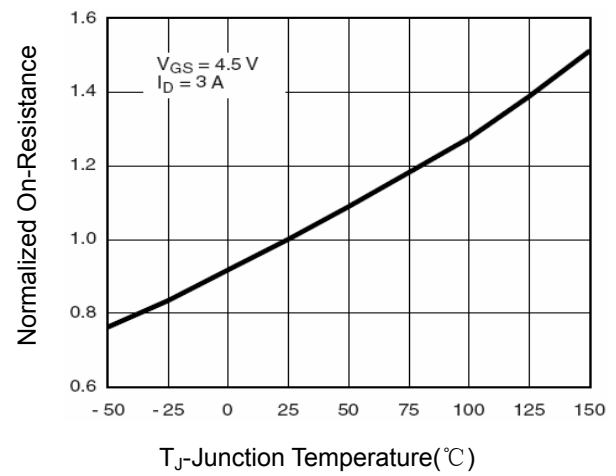


Figure 8 Drain-Source On-Resistance

■ TYPICAL CHARACTERISTICS(Cont.)

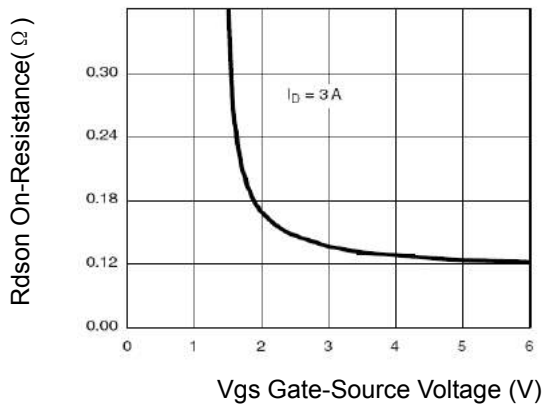


Figure 9 Rds(on) vs Vgs

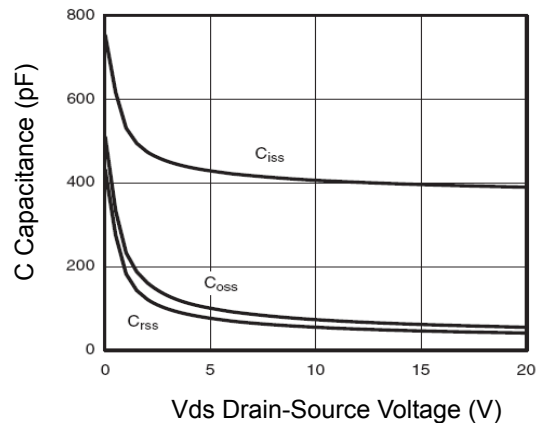


Figure 10 Capacitance vs Vds

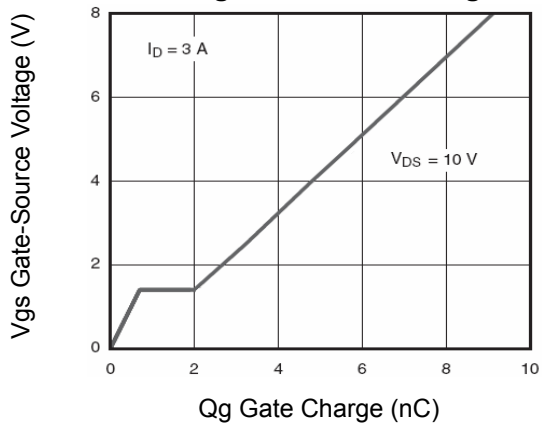


Figure 11 Gate Charge

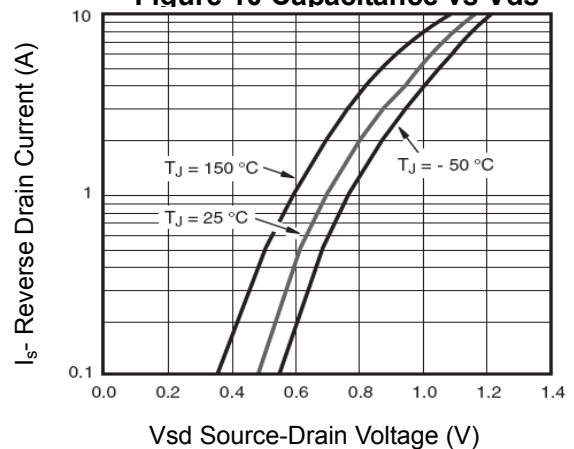


Figure 12 Source-Drain Diode Forward

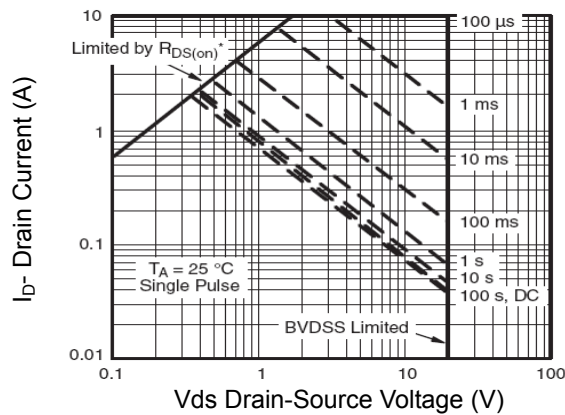


Figure 13 Safe Operation Area

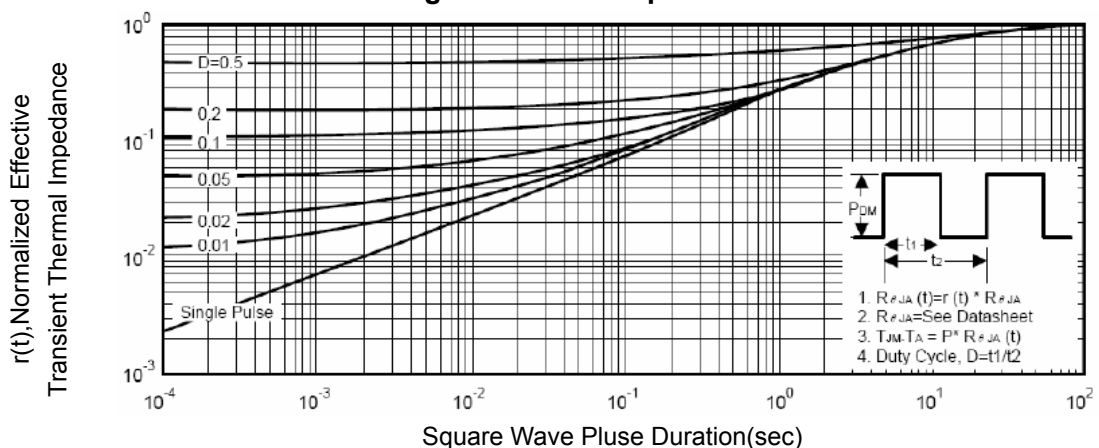
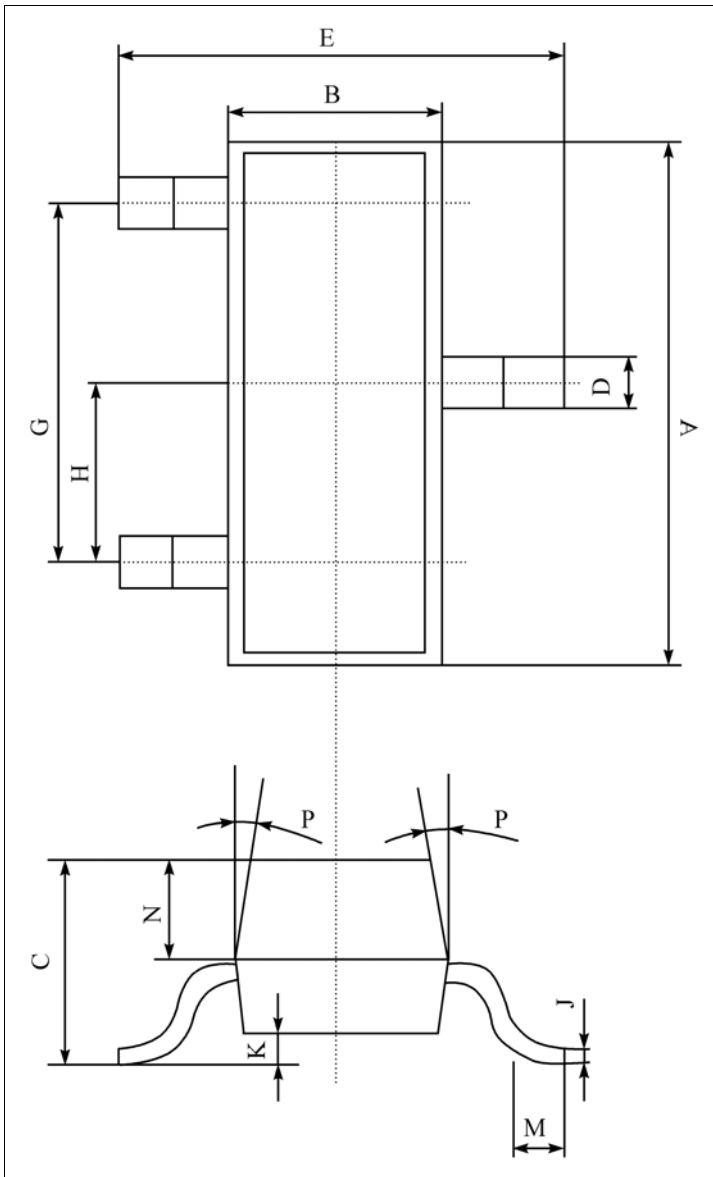


Figure 14 Normalized Maximum Transient Thermal Impedance

■ SOT-23-3L PACKAGE OUTLINE DIMENSIONS

单位 (UNIT) : mm

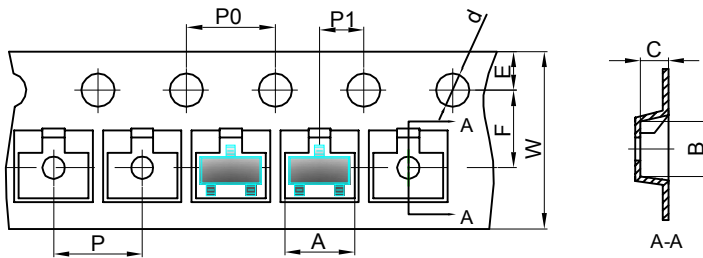


序号	数值及公差
A	2.90±0.10
B	1.30±0.10
C	1.00±0.10
D	0.40±0.10
E	2.40±0.20
G	1.90±0.10
H	0.95±0.05
J	0.13±0.05
K	0.00-0.10
M	≥0.20
N	0.60±0.10
P	7±2°

Packing
 SOT-23 包装规格
 SMD片式表面贴封装
 包装方式: 载带卷盘包装
 Tape & Reel, 3Kpcs/Reel
 每卷数量3000只 (3Kpcs/Reel)
 每盒数量45000只 (45Kpcs/BOX)
 每箱数量180000只 (180Kpcs/Cartons)

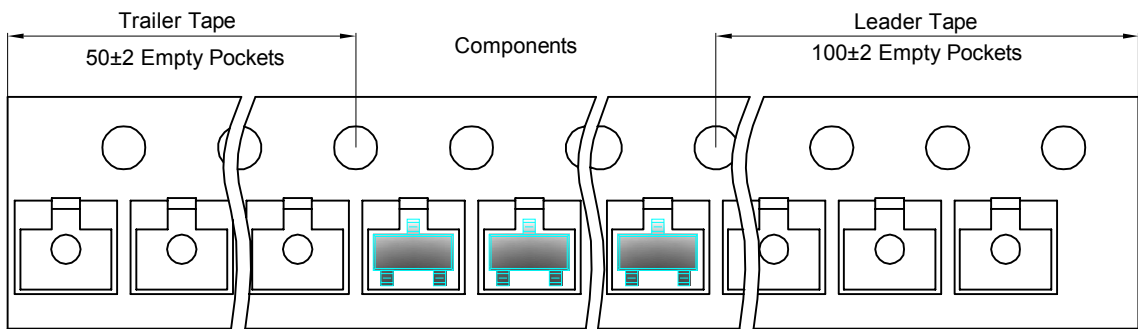
SOT-23 Tape and reel

SOT-23 Embossed Carrier Tape

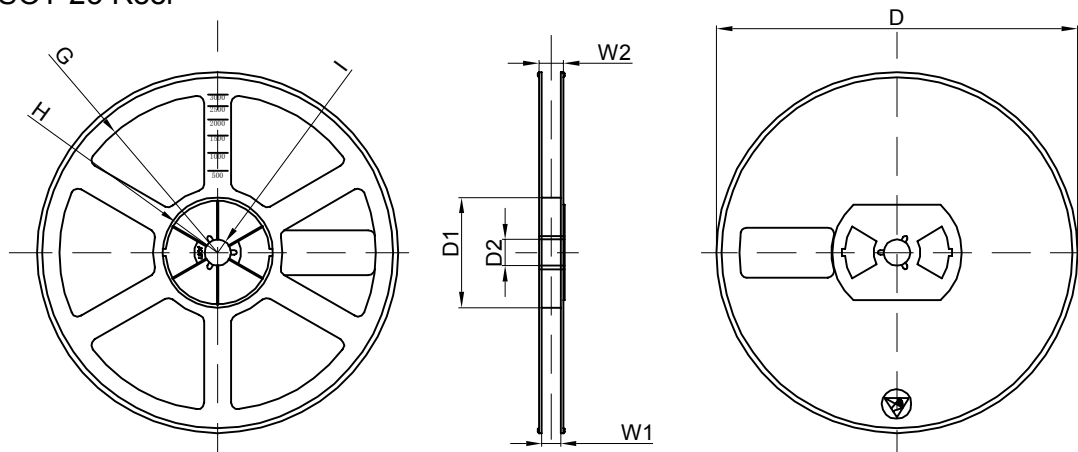


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer



SOT-23 Reel



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	192×192×193	180,000 pcs	404×404×214	

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