SOT-23 Plastic-Encapsulate MOSFETS

Features

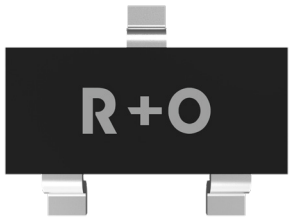
- V_{DS}=25V
- I_D=0.22A
- $R_{DS(on)}$@V_{GS}=4.5V ＜ 4.0Ω
- $R_{DS(on)}$@V_{GS}=2.7V ＜ 5.0Ω
- Trench Power MV MOSFET technology
- Voltage controlled small signal switch
- Fast Switching Speed

Drain-source Voltage
25 V
Drain Current
0.22 Ampere

Applications

- Battery operated systems
- Solid-state relays
- Direct logic-level interface：TTL/CMOS

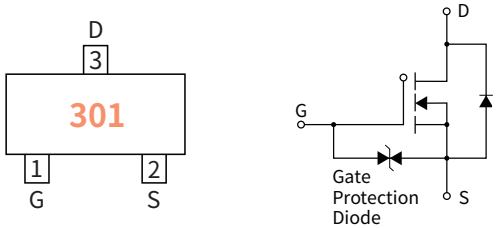
SOT-23



Mechanical Data

- Case: SOT-23
  Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

Reference News



Maximum Ratings (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Drain-source Voltage	V_{DS}	V	25
Gate-source Voltage	V_{GS}	V	±8.0
Drain Current	I_D	A	0.22
Pulsed Drain Current	I_{DM}	A	0.5
Total Power Dissipation @ T_A=25°C	P_D	W	0.35
Electrostatic Discharge Rating MIL-STD-883D Human Body Model (100pf /1500 Ohm)	ESD	KV	6.0
Thermal Resistance Junction-to-Ambient @ Steady State	$R_{\theta JA}$	°C / W	357
Junction and Storage Temperature Range	T_J,T_{STG}	°C	-55 ~+150

Ordering Information

PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
SOT-23	R1	0.008	3000	45000	180000	7''

Static Parameter Characteristics (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=250μA	V	25	—	—
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=20V,V_{GS}=0V	μA	—	—	1.0
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±8.0V, V_{DS}=0V	μA	—	—	±10
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	V	0.65	0.8	1.5
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 4.5V, I_D=0.4A	Ω	—	—	4.0
		V_{GS}= 2.7V, I_D=0.2A		—	—	5.0
Forward Transconductance	gfs	V_{DS}=5.0V, I_D=0.4A	S	—	0.2	—
Diode Forward Voltage	V_{SD}	I_S=0.29A,V_{GS}=0V	V	—	—	1.2
Maximum Body-Diode Continuous Current	I_S	—	A	—	—	0.29

Dynamic Parameters (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C_{iss}	V_{DS}=10V V_{GS}=0V f=1MHZ	pF	—	9.5	—
Output Capacitance	C_{oss}			—	6.0	—
Reverse Transfer Capacitance	C_{rss}			—	1.3	—

Switching Parameters (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Total Gate Charge	Q_g	V_{GS}=4.5V V_{DS}=5.0V I_D=0.2A	nC	—	0.49	0.7
Gate-Source Charge	Q_{gs}			—	0.22	—
Gate-Drain Charge	Q_{gd}			—	0.07	—
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=4.5V V_{DD}=6.0V I_D=0.5A R_{GEN}=50Ω	ns	—	3.2	8.0
Turn-on Rise Time	t_r			—	6.0	15
Turn-off Delay Time	$t_{D(off)}$			—	3.5	8.0
Turn-off fall Time	t_f			—	3.5	8.0

Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)

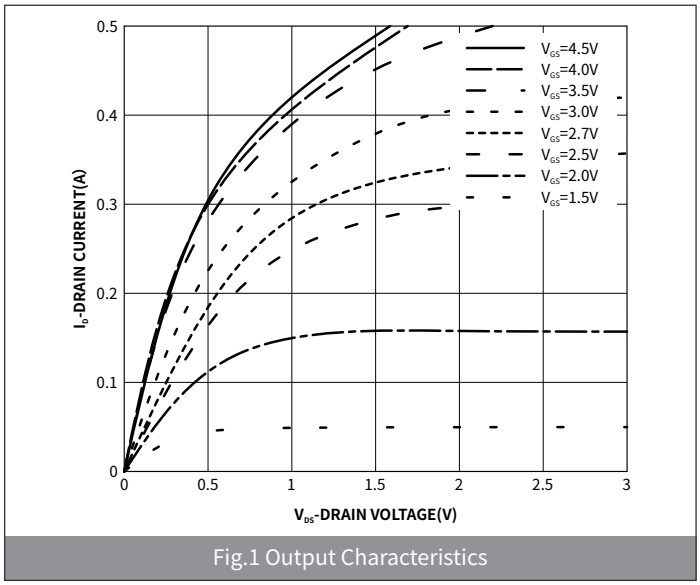


Fig.1 Output Characteristics

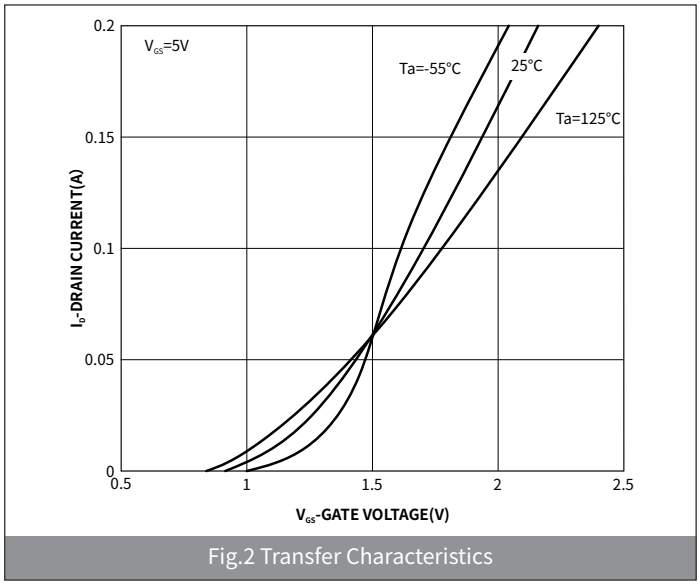


Fig.2 Transfer Characteristics

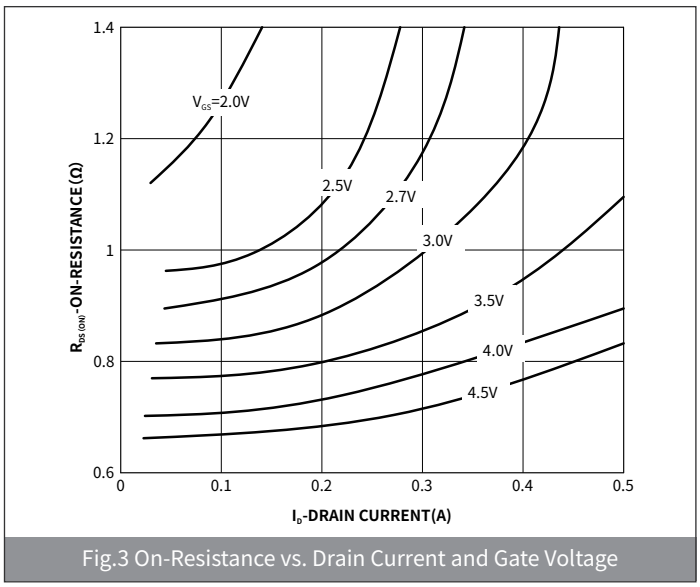


Fig.3 On-Resistance vs. Drain Current and Gate Voltage

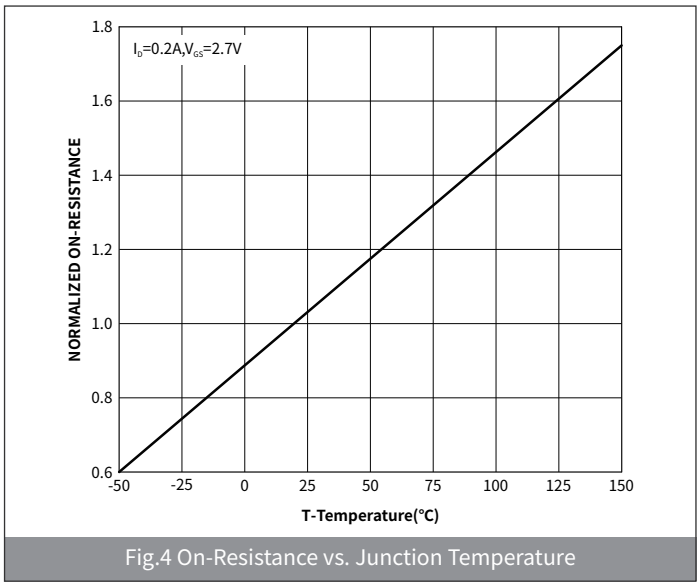


Fig.4 On-Resistance vs. Junction Temperature

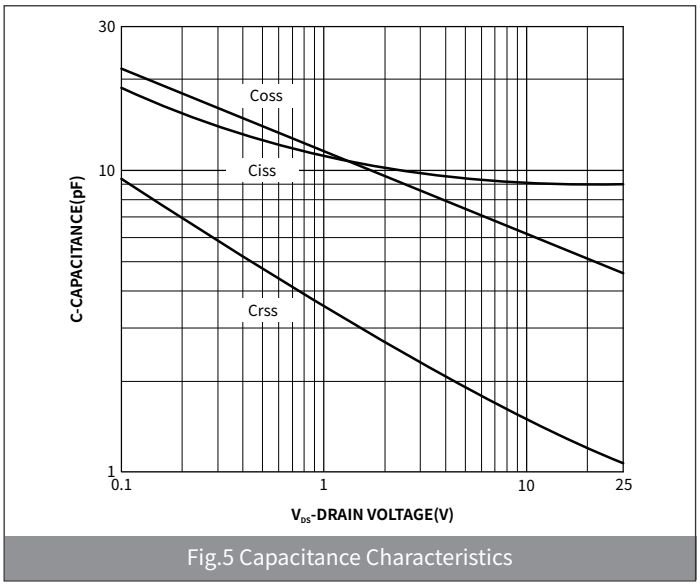


Fig.5 Capacitance Characteristics

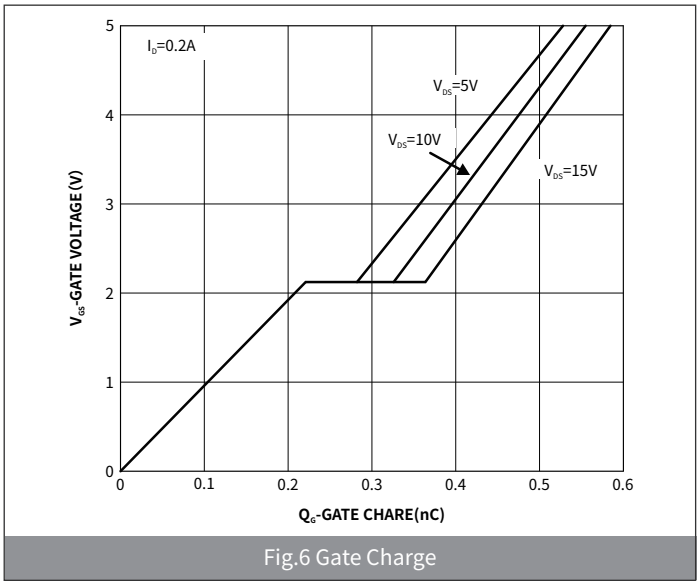


Fig.6 Gate Charge

Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)

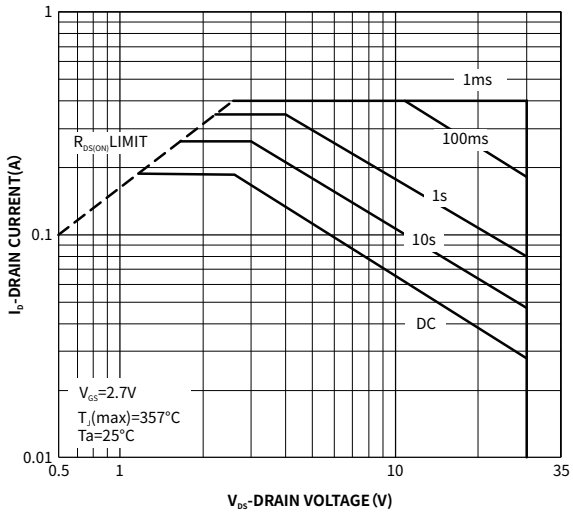


Fig.7 Safe Operation Area

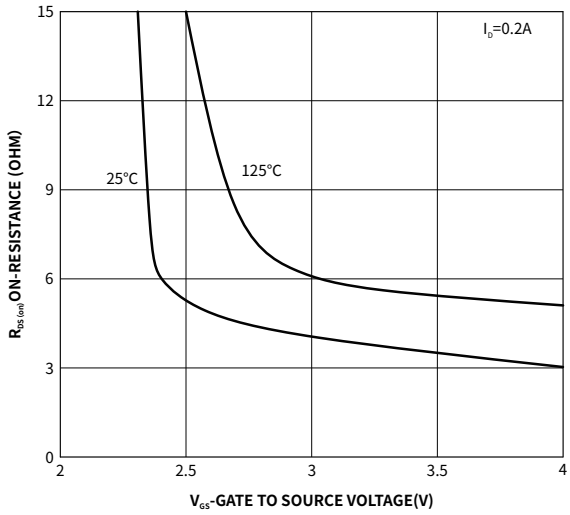


Fig.8 On Resistance Variation with Gate-To-Source Voltage

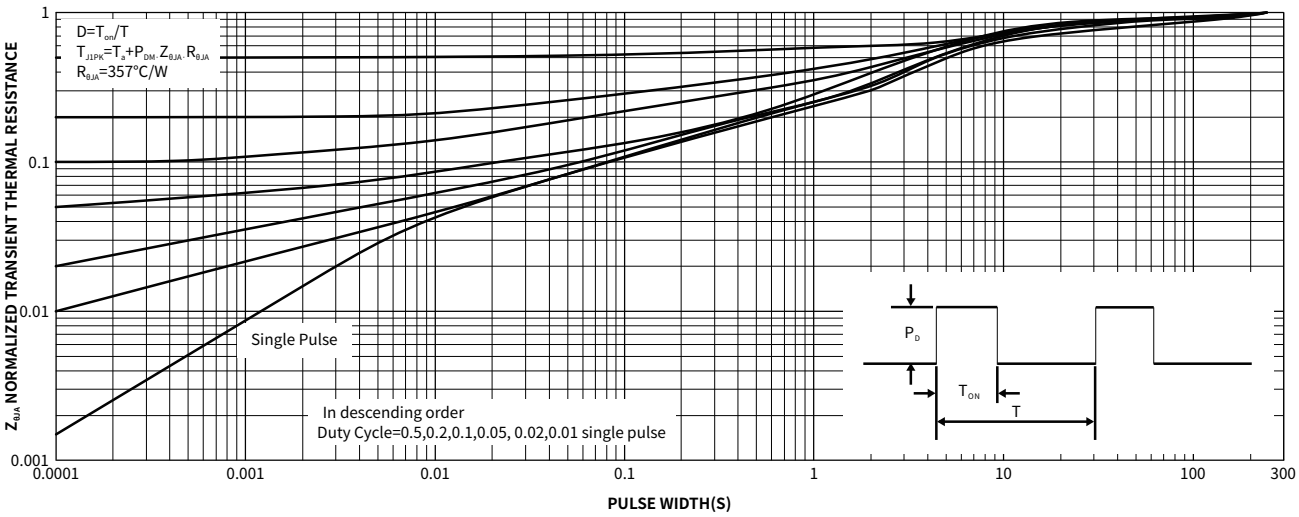
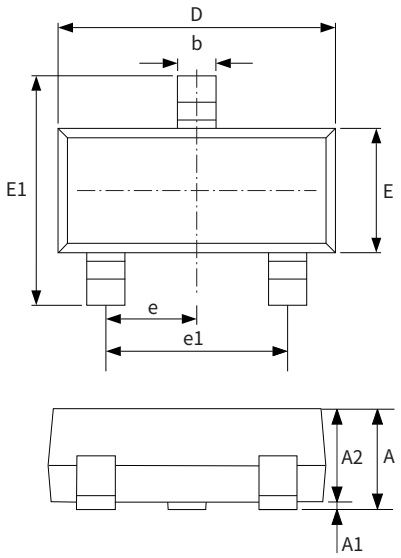


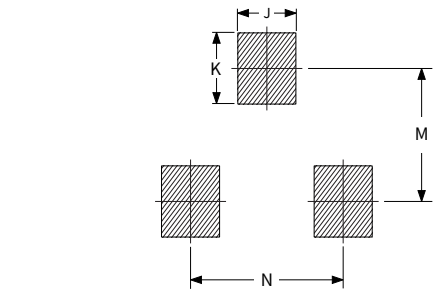
Fig.9 Normalized Maximum Transient Thermal Impedance

Package Outline Dimensions (SOT-23)



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.15	0.035	0.045
A1	-	0.10	-	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.50	0.012	0.020
c	0.10	0.20	0.004	0.008
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.80	2.00	0.071	0.079
L	0.550REF		0.022REF	
L1	0.30	0.50	0.012	0.020
θ	-	8°	-	8°

Suggested Pad Layout



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
J	0.75	0.85	0.030	0.033
K	0.85	0.95	0.033	0.037
M	1.95	2.05	0.077	0.081
N	1.85	1.95	0.073	0.077