

## SOT-23 Plastic-Encapsulate MOSFETS

### Features

- $V_{DS}=20V$
- $I_D=4.5A$
- $R_{DS(on)}@V_{GS}=4.5V < 25m\Omega$
- $R_{DS(on)}@V_{GS}=2.5V < 32m\Omega$
- Trench Power LV MOSFET technology
- High density cell design for low  $R_{DS(on)}$
- High Speed switching

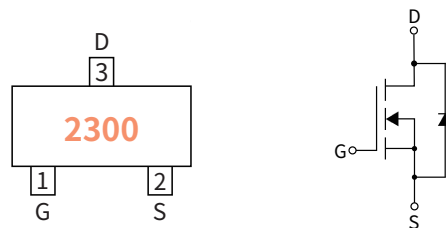
### Applications

- Battery protection
- Load switch
- Power management

### 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

### Function Diagram



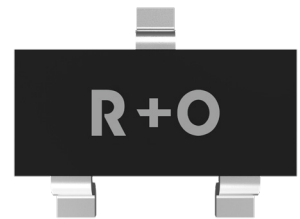
**Drain-source Voltage**

20 V

**Drain Current**

4.5 Ampere

SOT-23



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

PARAMETER		SYMBOL	UNIT	VALUE
Drain-source Voltage		$V_{DS}$	V	20
Gate-source Voltage		$V_{GS}$	V	$\pm 10$
Drain Current	Ta=25°C	$I_D$	A	4.5
	Ta=100°C			2.8
Pulsed Drain Current		$I_{DM}$	A	30
Total Power Dissipation	Ta=25°C	$P_D$	W	1
	Ta=100°C			0.4
Storage temperature	$T_{stg}$	°C	—	-55 ~+150
Junction temperature	$T_j$	°C	—	-55 ~+150
Thermal Resistance Junction-to-Ambient		$R_{\theta J-A}$	°C /W	125

### 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	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	V	20	—	—
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V$	$\mu A$	—	—	1.0
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 10V, V_{DS}=0V$	nA	—	—	$\pm 100$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	V	0.4	0.6	1
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=4.5A$	m $\Omega$	—	20	25
		$V_{GS}=2.5V, I_D=3A$		—	25	32
		$V_{GS}=1.8V, I_D=2.7A$		—	33	46
Diode Forward Voltage	$V_{SD}$	$I_S=4.5A, V_{GS}=0V$	V	—	0.9	1.2
Gate resistance	$R_G$	f=1MHz, Open drain	$\Omega$	—	2.7	—
Maximum Body-Diode Continuous Current	$I_S$	—	A	—	—	4.5

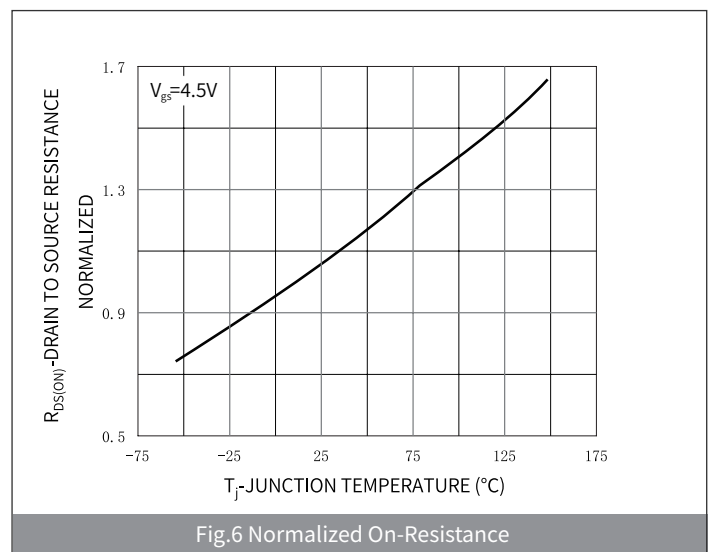
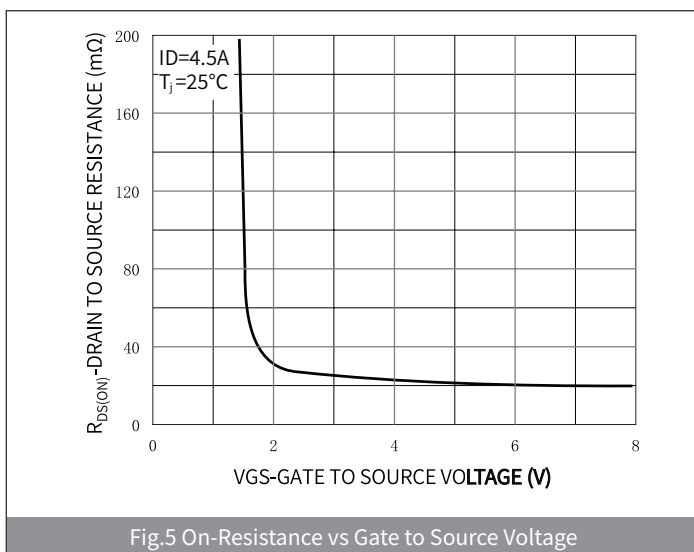
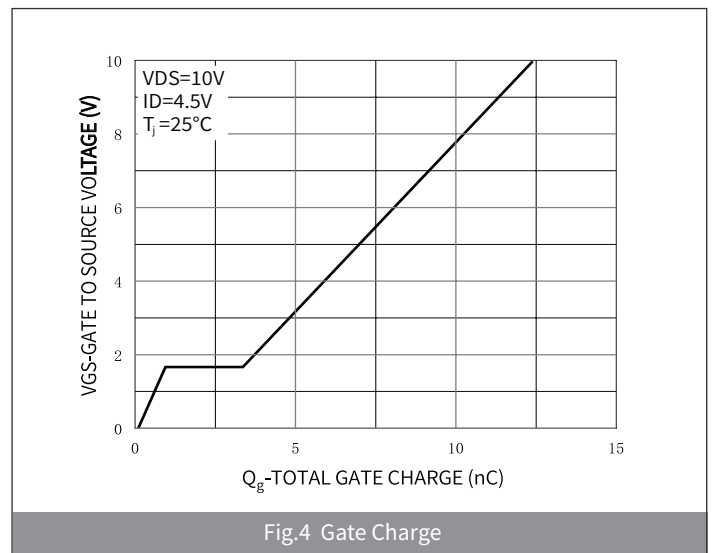
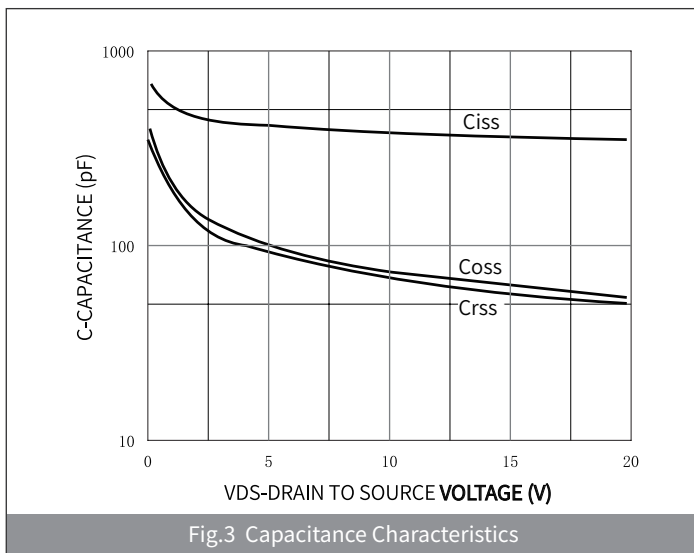
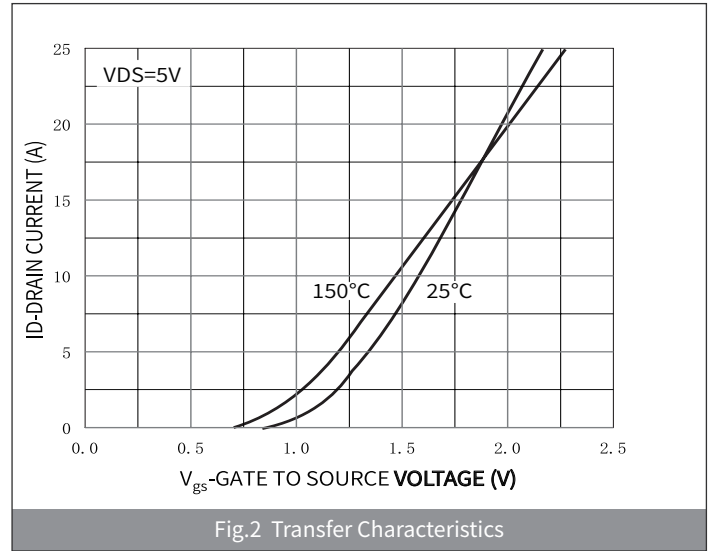
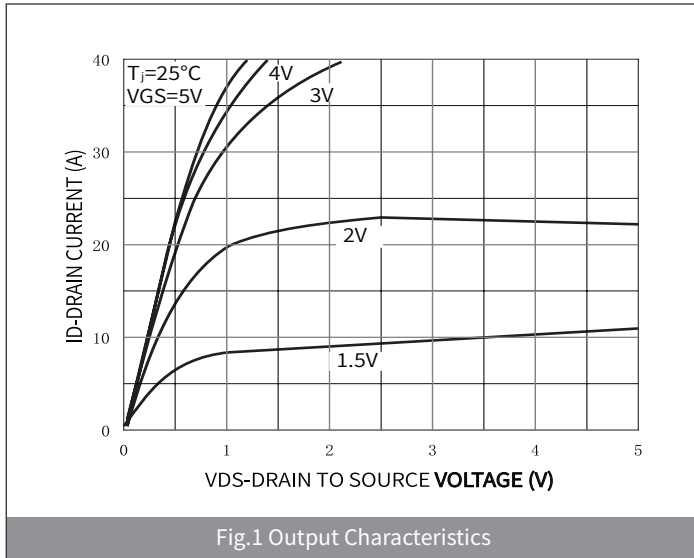
● **Dynamic Parameters** (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	$C_{iss}$	$V_{DS}=10V$ $V_{GS}=0V$ f=1MHz	pF	—	418	—
Output Capacitance	$C_{oss}$			—	82	—
Reverse Transfer Capacitance	$C_{rss}$			—	70	—

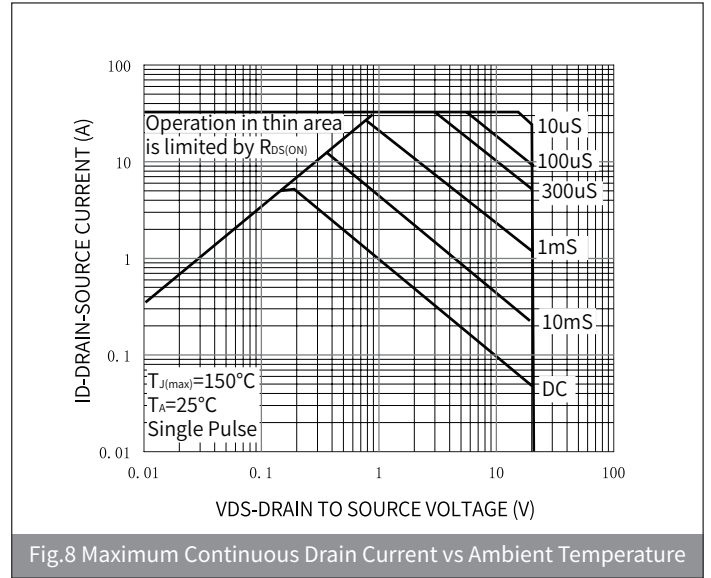
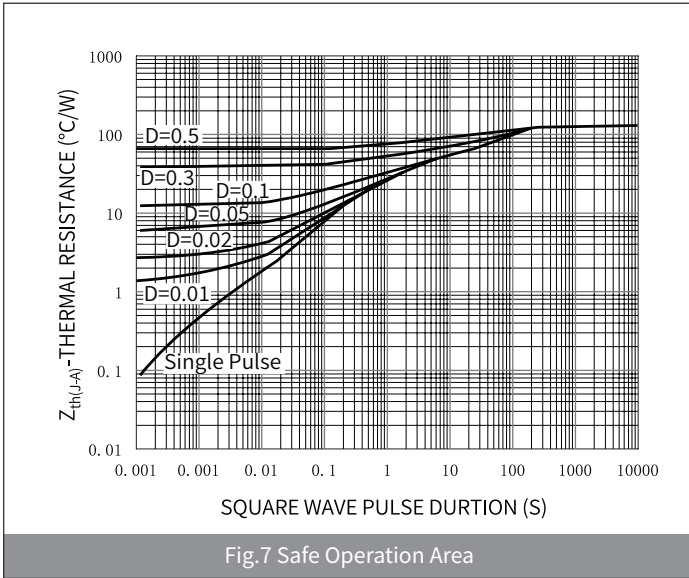
● **Switching Parameters** (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Total Gate Charge	$Q_g$	$V_{GS}=4.5V, V_{DS}=10V, I_D=4.5A$	nC	—	6.06	—
Gate-Source Charge	$Q_{gs}$			—	1.07	—
Gate-Drain Charge	$Q_{gd}$			—	1.95	—
Reverse Recovery Charge	$Q_{rr}$	$I_F=4.5A, di/dt=150A/us$	nC	—	1.38	—
Reverse Recovery Time	$t_{rr}$		ns	—	17.9	—
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=4.5V, V_{DS}=10V, I_D=4.5A$ $R_{GEN}=3\Omega$	ns	—	4.2	—
Turn-on Rise Time	$t_r$			—	19.8	—
Turn-off Delay Time	$t_{D(off)}$			—	22.6	—
Turn-off fall Time	$t_f$			—	23.2	—

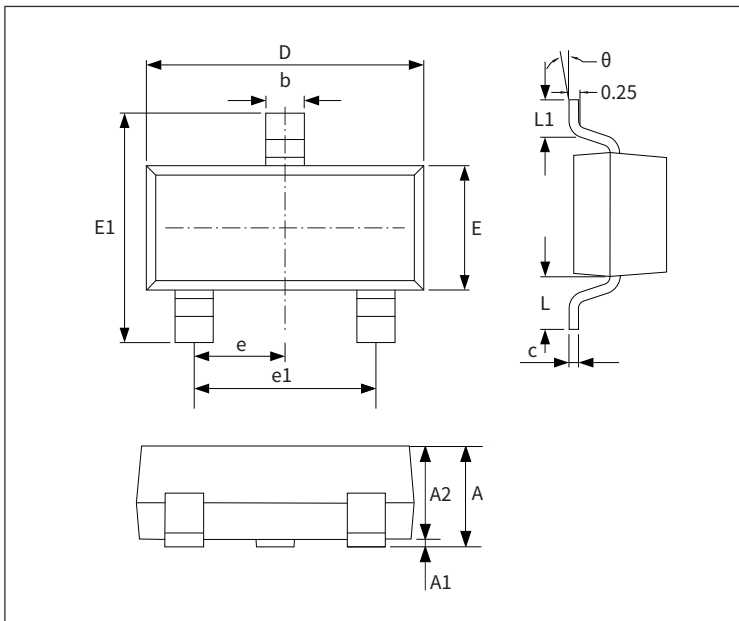
● Ratings And Characteristics Curves ( $T_a=25^\circ\text{C}$  Unless otherwise specified)



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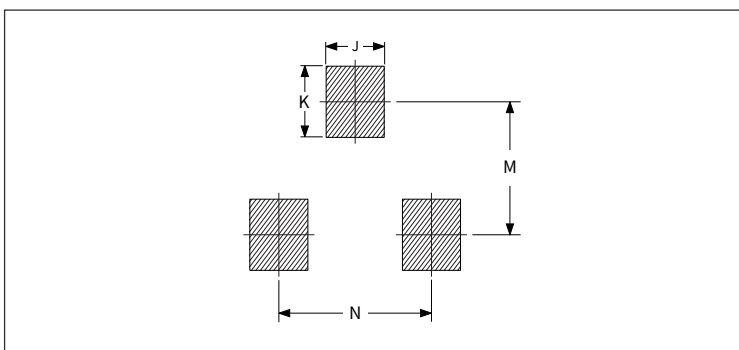


● Package Outline Dimensions (SOT-23)



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