

SOT-23 Plastic-Encapsulate MOSFETS

Features

- $V_{DS}=-30V$
- $I_D=-4.4A$
- $R_{DS(on)}@V_{GS}=-10V < 55m\Omega$
- $R_{DS(on)}@V_{GS}=-4.5V < 68m\Omega$
- $R_{DS(on)}@V_{GS}=-2.5V < 96m\Omega$
- Trench Power LV MOSFET technology
- High Speed switching

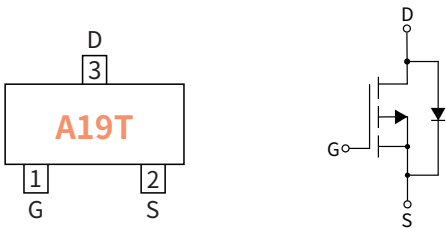
Applications

- Battery protection
- Load switch
- Power management

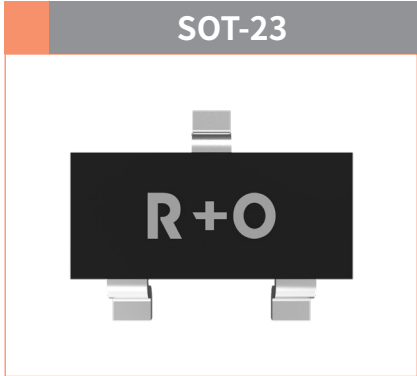
Mechanical Data

- 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
-30 V
Drain Current
-4.4 Ampere



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

PARAMETER	SYMBOL	UNIT	VALUE
Drain-source Voltage	V_{DS}	V	-30
Gate-source Voltage	V_{GS}	V	± 12
Drain Current	I_D	A	-4.4
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	-17
Total Power Dissipation ⁽²⁾	P_D	W	1.2
Junction temperature	T_J	°C	-55 ~+150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Ambient @ Steady State ⁽²⁾	$R_{\theta JA}$	°C / W	104

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	-30	—	—
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-24V, V_{GS}=0V$	μA	—	—	-1.0
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	nA	—	—	± 100
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	V	-0.6	-0.9	-1.4
Static Drain-Source On-Resistance ⁽³⁾	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-4.4A$	m Ω	—	45.5	55
		$V_{GS}=-4.5V, I_D=-4.0A$		—	52	68
		$V_{GS}=-2.5V, I_D=-2.0A$		—	64	96
Forward Transconductance	g_{FS}	$V_{DS}=-5.0V, I_D=-5.0A$	S	10	—	—
Diode Forward Voltage	V_{SD}	$I_S=-4.4A, V_{GS}=0V$	V	—	—	-1.2
Maximum Body-Diode Continuous Current	I_S	—	A	—	—	-4.4

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

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C_{iss}	$V_{DS}=-15V$ $V_{GS}=0V$ $f=1MHz$	pF	—	1040	—
Output Capacitance	C_{oss}			—	80	—
Reverse Transfer Capacitance	C_{rss}			—	68	—

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

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Total Gate Charge	Q_g	$V_{GS}=-4.5V$ $V_{DS}=-15V$ $I_D=-4.4A$	nC	—	22	—
Gate-Source Charge	Q_{gs}			—	3.0	—
Gate-Drain Charge	Q_{gd}			—	2.0	—
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=-10V$ $V_{DS}=-15V$ $I_D=-1.0A$ $R_{GEN}=2.5\Omega$	ns	—	5.0	—
Turn-on Rise Time	t_r			—	26	—
Turn-off Delay Time	$t_{D(off)}$			—	50	—
Turn-off fall Time	t_f			—	43	—

Note :

(1) Repetitive rating, pulse width limited by junction temperature $T_{J(max)}=150^\circ C$. Ratings are based on low frequency and duty cycles to keep initial $T_J=25^\circ C$.

(2) The value of P_D and $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ C$.

(3) Pulse test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

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

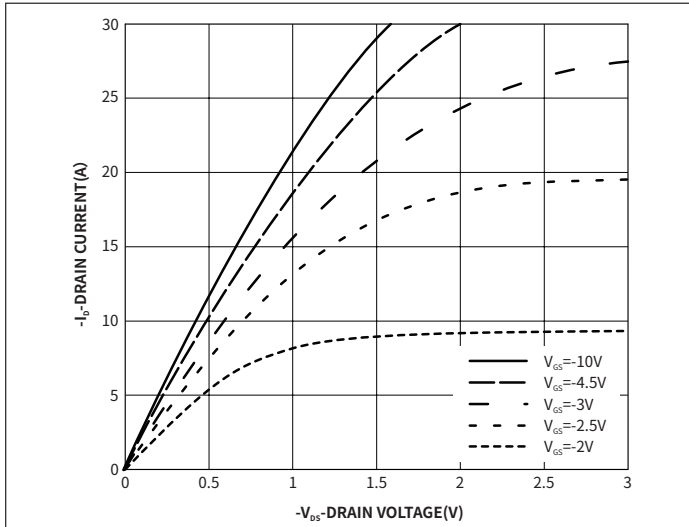


Fig.1 Output Characteristics

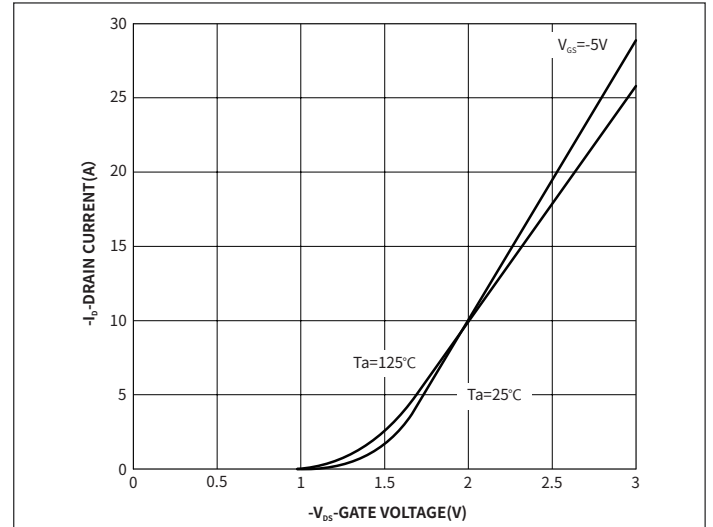


Fig.2 Transfer Characteristics

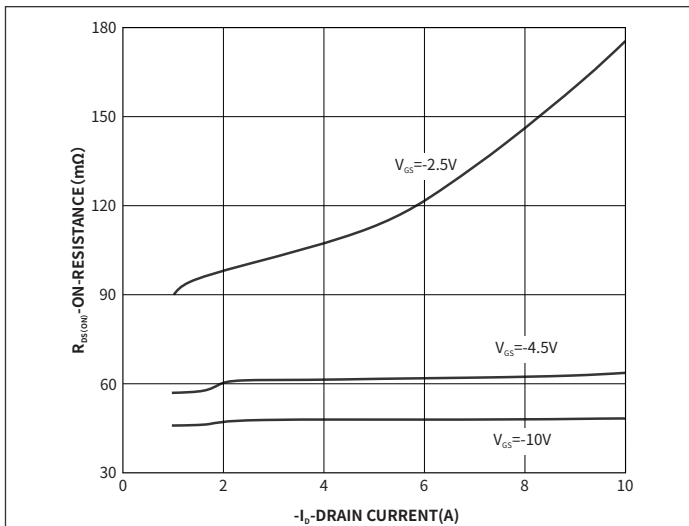


Fig.3 On-Resistance vs. Drain Current and Gate Voltage

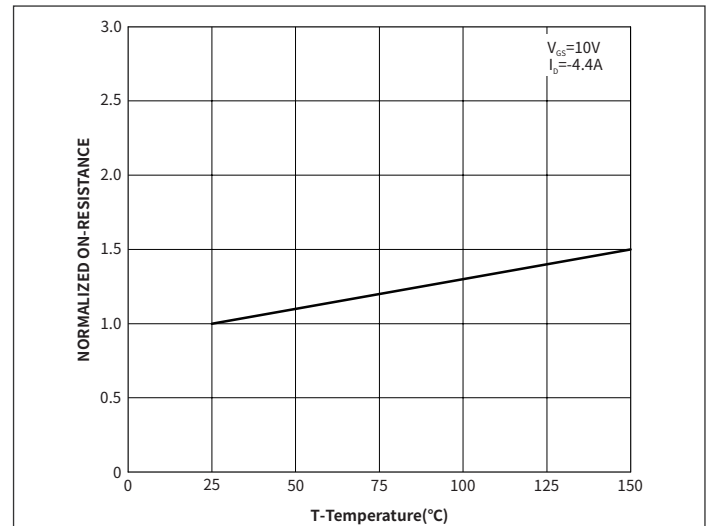


Fig.4 On-Resistance vs. Junction Temperature

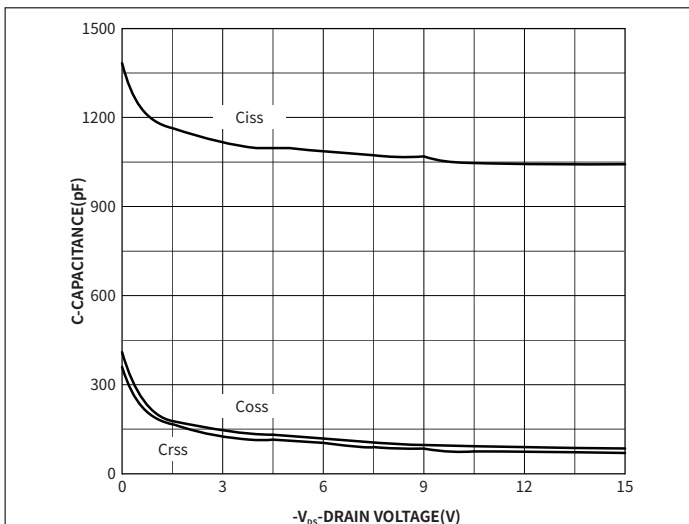


Fig.5 Capacitance Characteristics

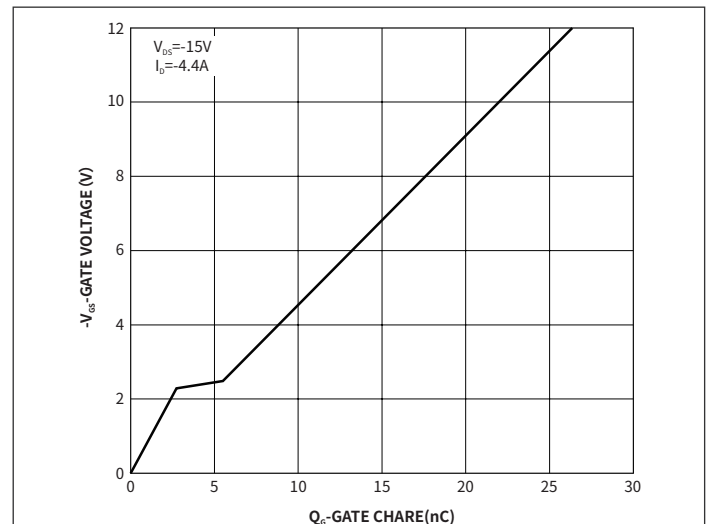
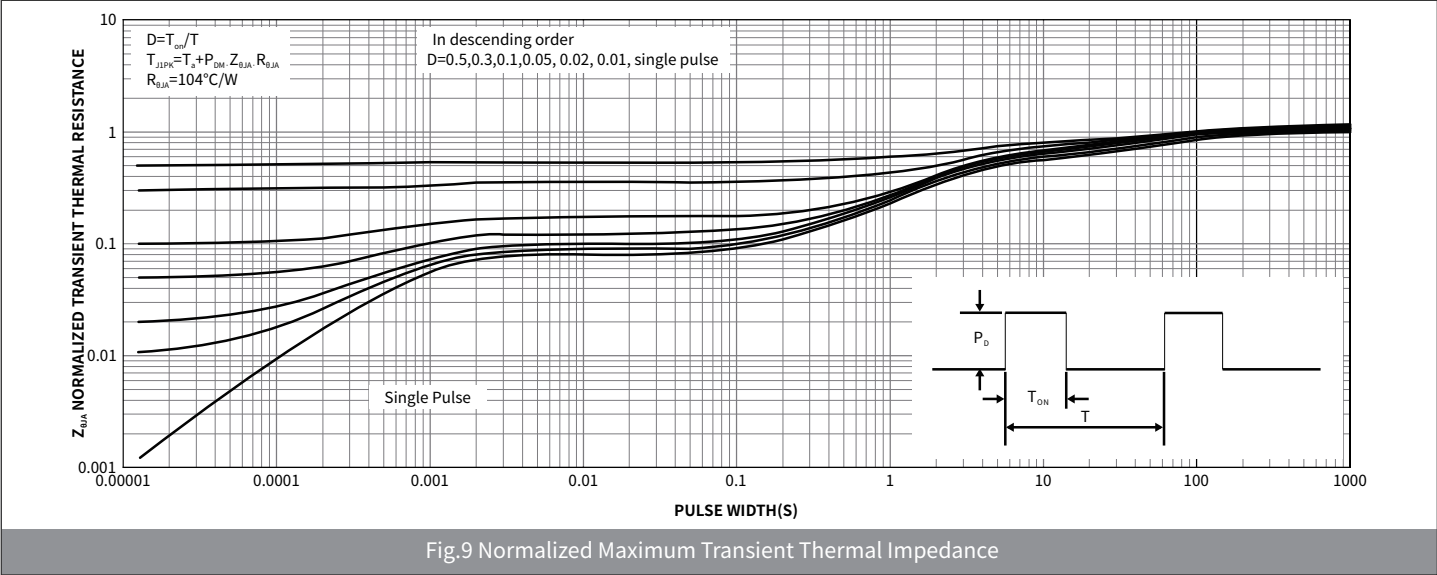
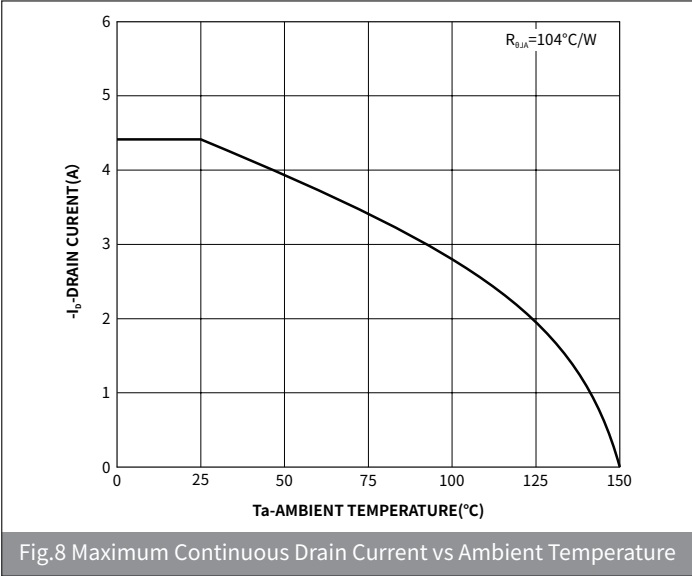
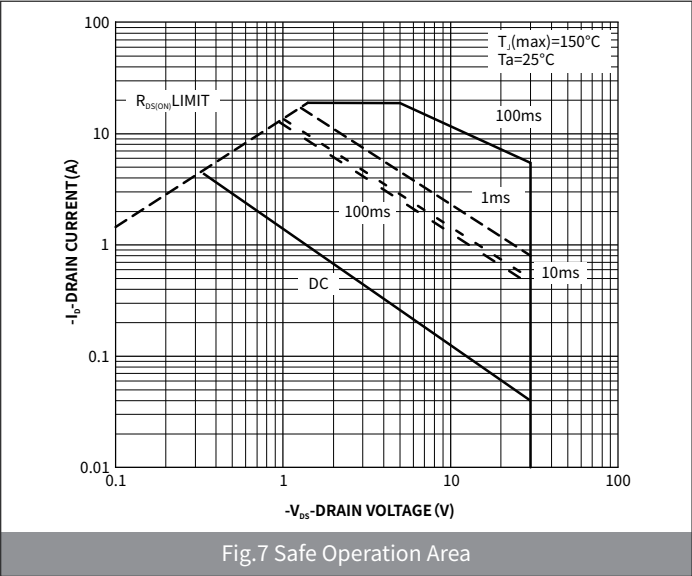
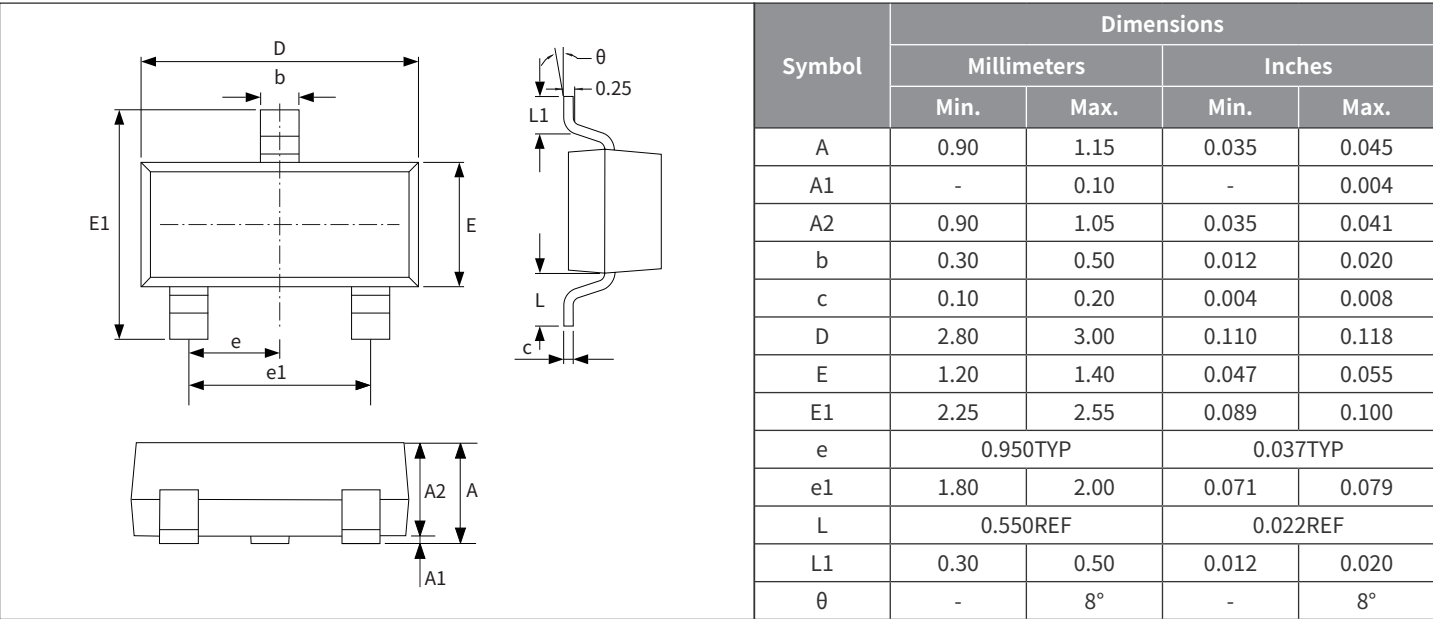


Fig.6 Gate Charge

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



● Package Outline Dimensions (SOT-23)



● Suggested Pad Layout

