

SOT-23 Plastic-Encapsulate MOSFETS

Features

- $V_{DS} = -20V$
- $I_D = -3.6A$
- $R_{DS(on)}@V_{GS} = -4.5V < 30m\Omega$
- $R_{DS(on)}@V_{GS} = -2.5V < 53m\Omega$
- Trench Power MV MOSFET technology
- Voltage controlled small signal switch
- Fast Switching Speed

Applications

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

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

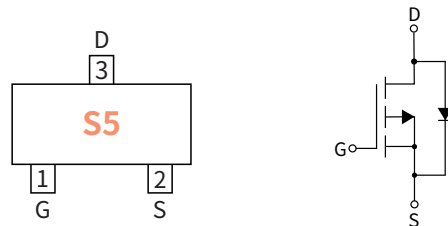
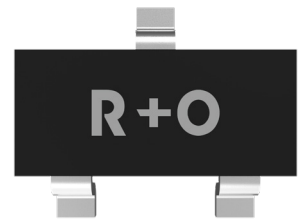
Drain-source Voltage

-12 V

Drain Current

-3.6 Ampere

SOT-23



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

PARAMETER		SYMBOL	UNIT	VALUE
Drain-source Voltage		V_{DS}	V	-12
Gate-source Voltage		V_{GS}	V	± 12
Drain Current	$T_A = 25^\circ C$ @ Steady State	I_D	A	-3.6
	$T_A = 70^\circ C$ @ Steady State			-2.8
Pulsed Drain Current ⁽¹⁾		I_{DM}	A	-10
Total Power Dissipation @ $T_A = 25^\circ C$		P_D	W	1.25
Thermal Resistance Junction-to-Ambient @ Steady State ⁽²⁾		$R_{\theta JA}$	$^\circ C / W$	357
Junction and Storage Temperature Range		T_J, T_{STG}	$^\circ C$	-55 ~ +150

Note:

(1) Repetitive Rating: Pulse width limited by maximum junction temperature. (2) Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

(2) Surface Mounted on FR4 Board, $t \geq 10$ sec

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	-12	—	—
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V$	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	-0.5	—	-0.9
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-2.6A$	m Ω	—	26	30
		$V_{GS}=-2.5V, I_D=-2.0A$		—	40	53
		$V_{GS}=-1.8V, I_D=-2.0A$		—	52	90
Forward Transconductance	g_{fs}	$V_{DS}=-5.0V, I_D=-2.0A$	S	—	5.0	—
Diode Forward Voltage	V_{SD}	$I_S=-0.75A, V_{GS}=0V$	V	—	—	-1.2

● **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	—	740	—
Output Capacitance	C_{oss}			—	290	—
Reverse Transfer Capacitance	C_{rss}			—	190	—

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

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Total Gate Charge	Q_g	$V_{GS}=-2.5V$ $V_{DS}=-10V$ $I_D=-3.0A$	nC	—	3.3	12
Gate-Source Charge	Q_{gs}			—	0.7	—
Gate-Drain Charge	Q_{gd}			—	1.3	—
Reverse Recovery Charge	Q_{rr}	$I_F=-0.75A$ $di/dt=100A/us$		—	27.7	—
Reverse Recovery Time	t_{rr}			—	22	—
Turn-on Delay Time	$t_{D(on)}$	$V_{DD}=-10V$ $V_{GEN}=-4.5V$ $R_L=10\Omega$ $R_G=1.0\Omega$ $I_D=-1.0A$	ns	—	11	—
Turn-on Rise Time	t_r			—	35	—
Turn-off Delay Time	$t_{D(off)}$			—	30	—
Turn-off fall Time	t_f			—	10	—

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

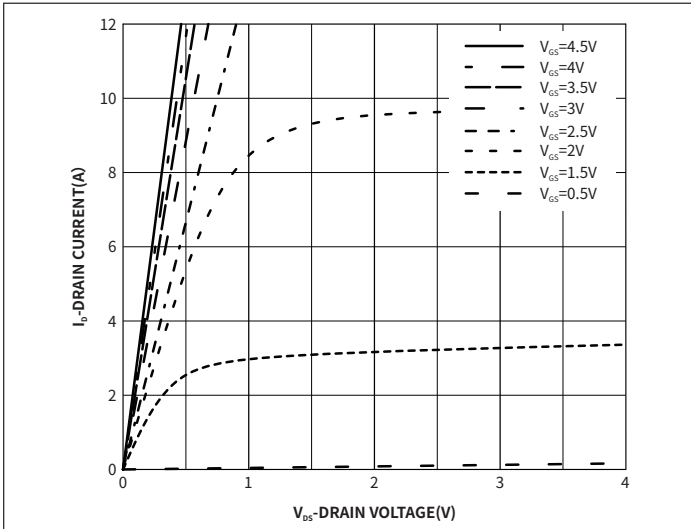


Fig.1 Output Characteristics

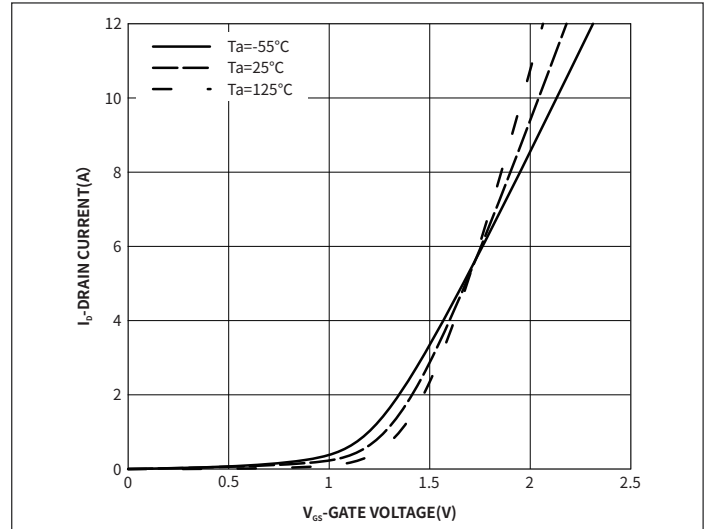


Fig.2 Transfer Characteristics

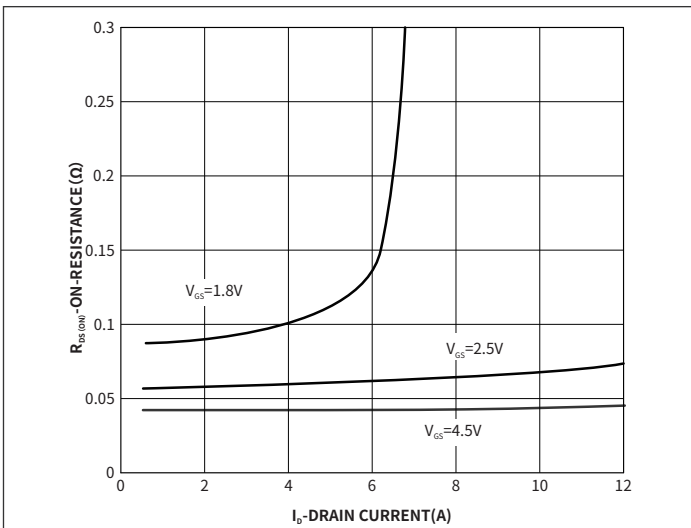


Fig.3 On-Resistance vs. Drain Current and Gate Voltage

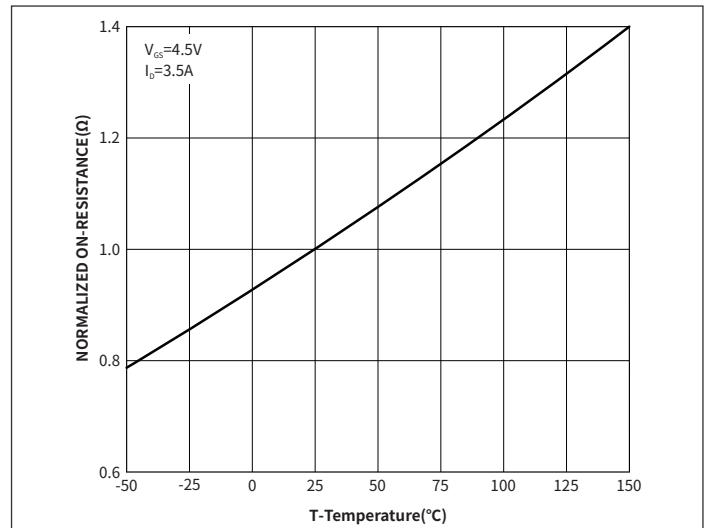


Fig.4 On-Resistance vs. Junction Temperature

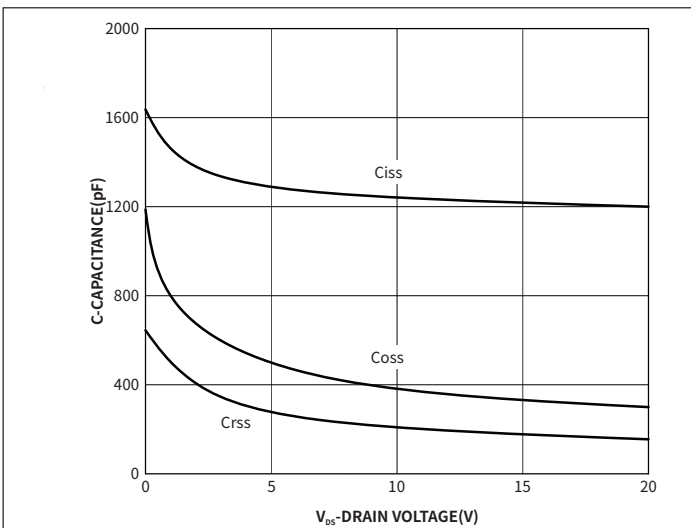


Fig.5 Capacitance Characteristics

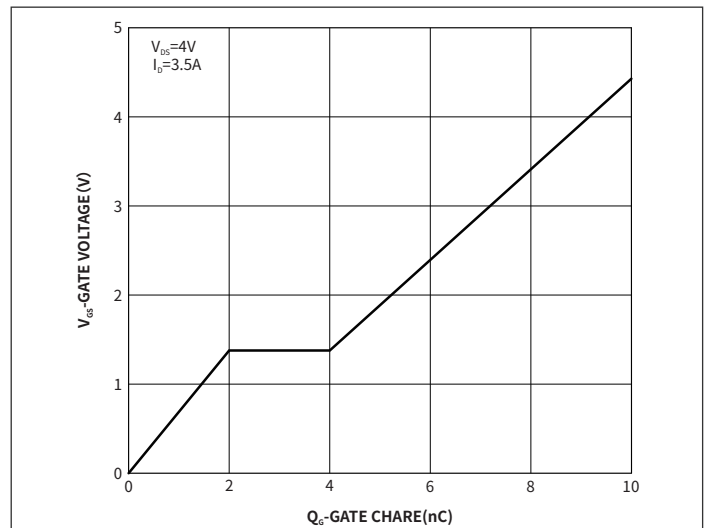
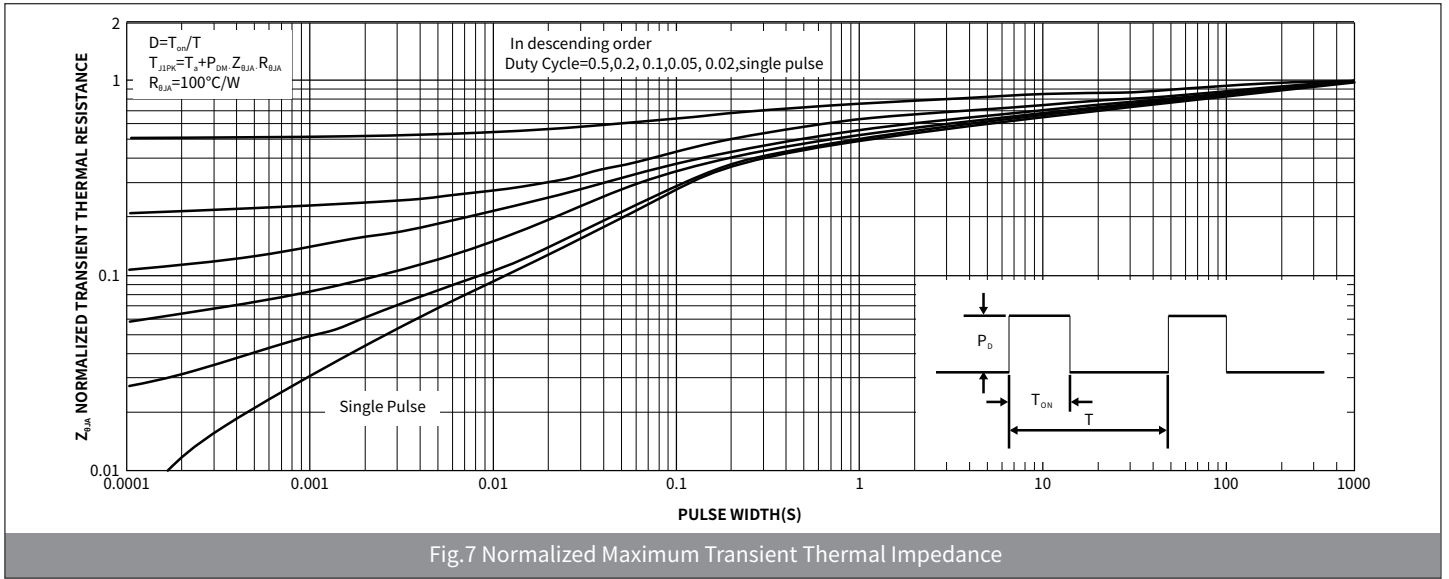
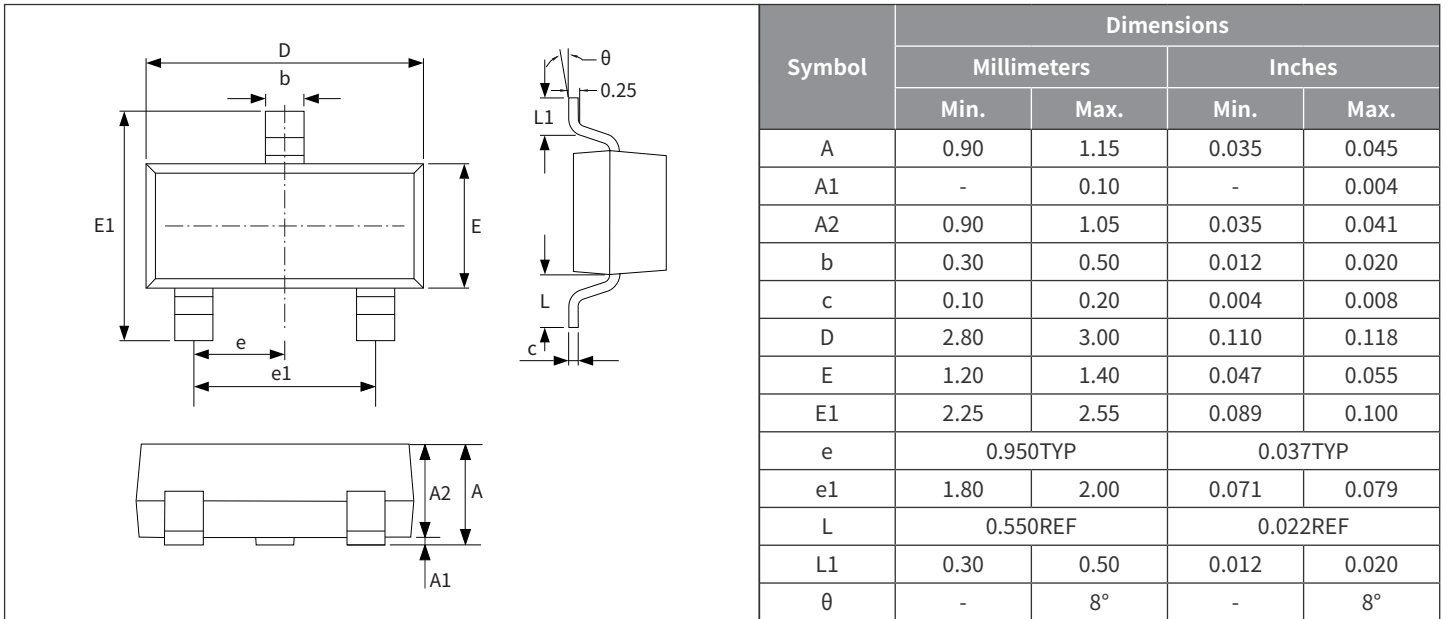


Fig.6 Gate Charge

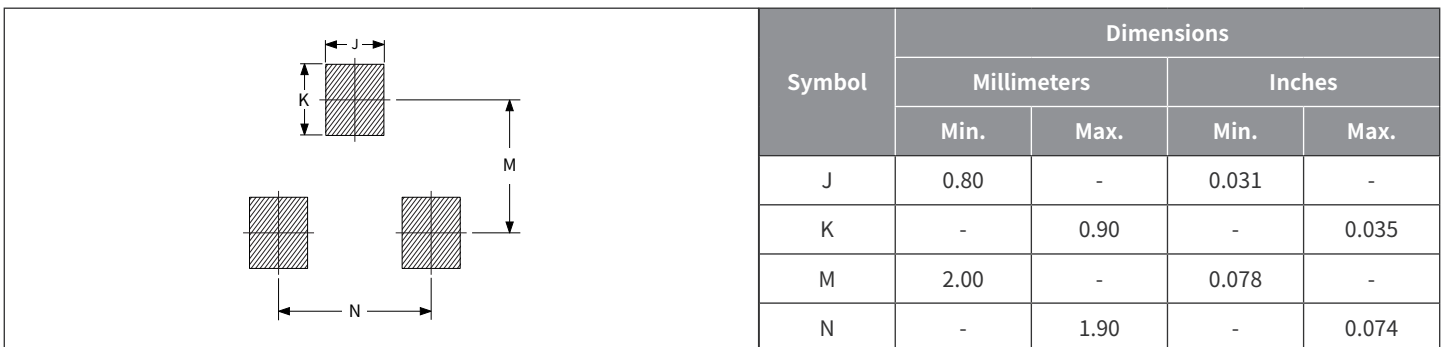
● Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



● Package Outline Dimensions (SOT-23)



● Suggested Pad Layout



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