

## N-Channel 100V (D-S) Power MOSFET

### Features

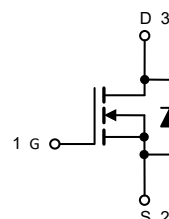
- 100% Avalanche Tested
- Halogen Free, Pb-Free
- RoHS Compliant



SOT-23

### Applications

- Relay driver
- Switching circuits
- High-side load switch
- High-speed line driver



### Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain Source Voltage	$V_{DS}$	100	V
Gate Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current, Continuous $V_{GS}=10\text{V}$	$I_D$	0.17	A
Drain Current, Pulsed (Note 1)	$I_{DM}$	0.68	A
Power Dissipation	$P_D$	225	W
Operating Junction/ Storage Temperature Range	$T_J / T_{STG}$	-55 to +150	$^\circ\text{C}$

Note 1: Single pulse;  $t_p \leq 1\text{us}$ .

### Thermal Characteristics

Parameter	Symbol	Max	Unit
Thermal Resistance Junction to Ambient (Note 2)	$R_{thJA}$	556	$^\circ\text{C/W}$

Note 2: Device mounted on 1 square inch FR4 PCB board, with 2oz single-sided copper, in a  $25^\circ\text{C}$  still air environment.

## Electrical Characteristics (T<sub>A</sub> =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	100	--	--	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V	--	--	15	uA
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =1mA	0.8	--	2	V
Gate Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	--	--	±50	nA
Drain-Source On-state Resistance (Note 3)	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =100mA	--	5	6	Ω
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =30V, R <sub>G</sub> =3Ω	--	20	--	ns
Turn-off Delay Time	t <sub>d(off)</sub>		--	40	--	
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =25V, f=1MHz	--	20	--	pF
Output Capacitance	C <sub>oss</sub>		--	9	--	
Reverse Transfer Capacitance	C <sub>rss</sub>		--	4	--	

## Reverse Diode Characteristics (T<sub>A</sub> =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Forward Current, Continuous	I <sub>SD</sub>	T <sub>C</sub> =25°C	--	--	0.17	A
Diode Forward Voltage (Note 3)	V <sub>SD</sub>	I <sub>F</sub> =0.34A, V <sub>GS</sub> =0V	--	--	1.3	V

Note 3: Pulse test; pulse width ≤ 380μs, duty cycle ≤ 1%.

## Typical Characteristics Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.1 - Output Characteristics

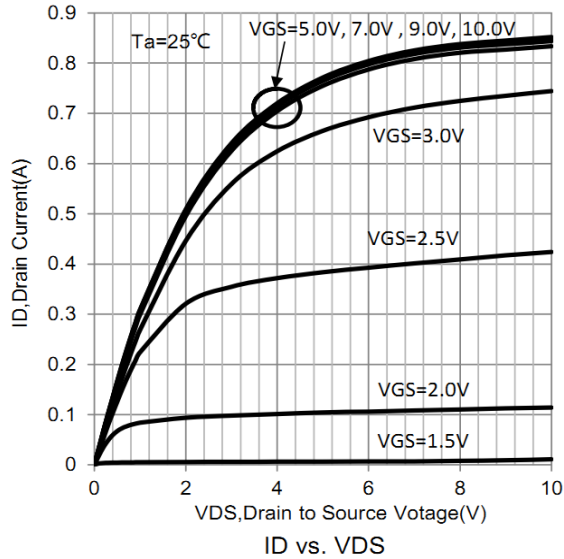


Fig.2 - Transfer Characteristics

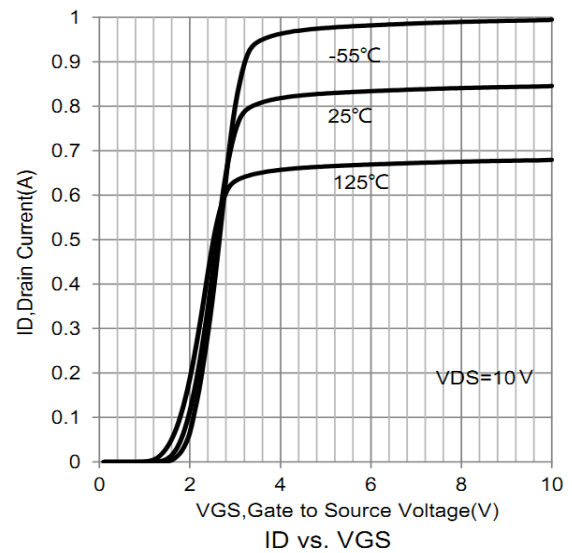


Fig.3 - Drain-Source On-Resistance

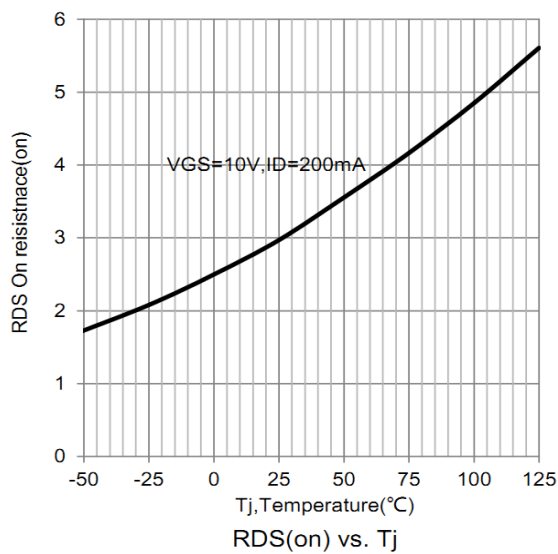
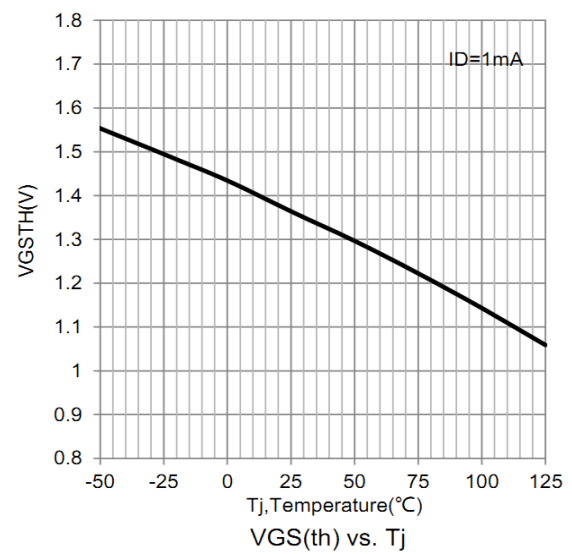
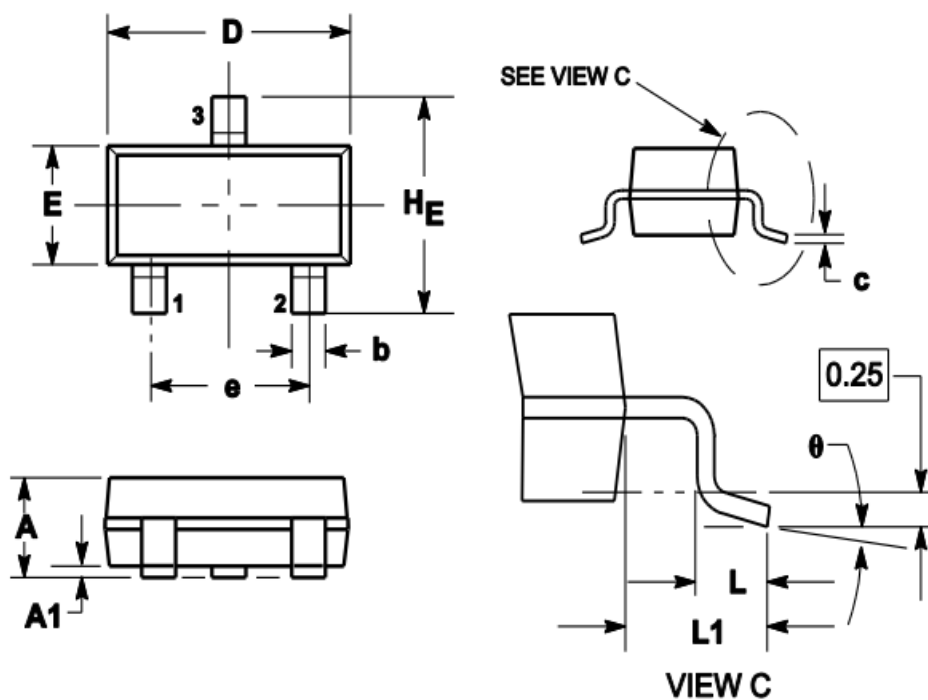


Fig.4 - Normalized Threshold Voltage



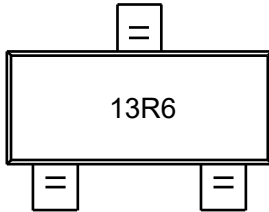
## Package Outline Dimensions (Unit: millimeters)

### SOT-23



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1	1.11	0.035	0.04	0.044
A1	0.01	0.06	0.1	0.001	0.002	0.004
b	0.37	0.44	0.5	0.015	0.018	0.02
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.9	3.04	0.11	0.114	0.12
E	1.20	1.3	1.4	0.047	0.051	0.055
e	1.78	1.9	2.04	0.07	0.075	0.081
L	0.10	0.2	0.3	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
H <sub>E</sub>	2.10	2.4	2.64	0.083	0.094	0.104
θ	0°	---	10°	0°	---	10°

## Marking Outline



Part Name: GMN13R6

1. P/N Mark: 13R6

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