



# TSM2832

## 20V N-Channel Enhancement Mode MOSFET

SOT-89



Pin assignment:

1. Gate
2. Drain
3. Source

**V<sub>DS</sub> = 20V**

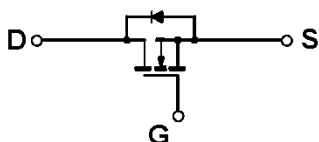
**R<sub>DS(on)</sub>, V<sub>GS</sub> @ 4.5V, I<sub>DS</sub> @ 3.6A = 60mΩ**

**R<sub>DS(on)</sub>, V<sub>GS</sub> @ 2.5V, I<sub>DS</sub> @ 3.1A = 90mΩ**

### Features

- ◇ Advanced trench process technology
- ◇ High density cell design for ultra low on-resistance
- ◇ Excellent thermal and electrical capabilities
- ◇ 2.5V operating voltage

### Block Diagram



### Ordering Information

Part No.	Packing	Package
TSM2832CY	Tape & Reel 1kpcs per reel	SOT-89

### Absolute Maximum Rating (Ta = 25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V <sub>DS</sub>	20V	V	
Gate-Source Voltage	V <sub>GS</sub>	± 8	V	
Continuous Drain Current	I <sub>D</sub>	3.6	A	
Pulsed Drain Current	I <sub>DM</sub>	10	A	
Maximum Power Dissipation		Ta = 25 °C	1.5	W
		Ta = 75 °C	1.0	
Operating Junction Temperature	T <sub>J</sub>	+150	°C	
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	- 55 to +150	°C	

### Thermal Performance

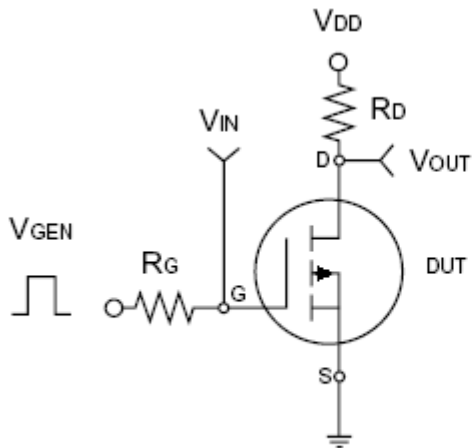
Parameter	Symbol	Limit	Unit
Lead Temperature (1/8" from case)	T <sub>L</sub>	5	S
Junction to Ambient Thermal Resistance (PCB mounted)	Rθja	65	°C/W

Note: Surface mounted on FR4 board t<=5sec.

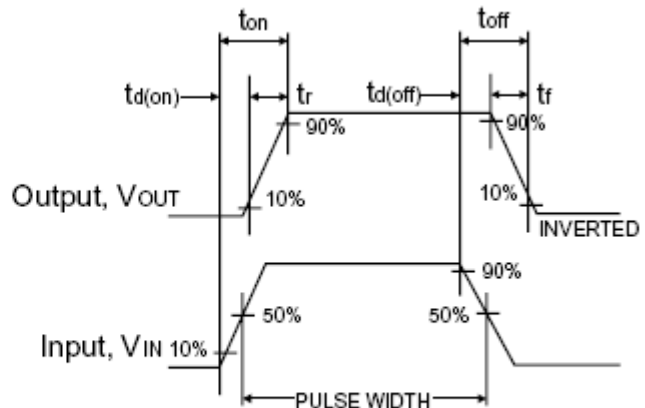


<b>Electrical Characteristics</b>						
Rate $I_D = 2.4A$ , ( $T_a = 25^\circ C$ unless otherwise noted)						
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	$BV_{DSS}$	20	--	--	V
Drain-Source On-State Resistance	$V_{GS} = 4.5V, I_D = 3.6A$	$R_{DS(ON)}$	--	50	60	m $\Omega$
Drain-Source On-State Resistance	$V_{GS} = 2.5V, I_D = 3.1A$	$R_{DS(ON)}$	--	75	90	
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	$V_{GS(TH)}$	0.45	--	--	V
Zero Gate Voltage Drain Current	$V_{DS} = 20V, V_{GS} = 0V$	$I_{DSS}$	--	--	1.0	$\mu A$
Gate Body Leakage	$V_{GS} = \pm 8V, V_{DS} = 0V$	$I_{GSS}$	--	--	$\pm 100$	nA
On-State Drain Current	$V_{DS} \geq 5V, V_{GS} = 4.5V$	$I_{D(ON)}$	6	--	--	A
Forward Transconductance	$V_{DS} = 5V, I_D = 3.6A$	$g_{fs}$	--	10	--	S
<b>Dynamic</b>						
Total Gate Charge	$V_{DS} = 10V, I_D = 3.6A,$ $V_{GS} = 4.5V$	$Q_g$	--	5.2	10	nC
Gate-Source Charge		$Q_{gs}$	--	0.65	--	
Gate-Drain Charge		$Q_{gd}$	--	1.5	--	
Turn-On Delay Time	$V_{DD} = 10V, R_L = 10\Omega,$ $I_D = 1A, V_{GEN} = 4.5V,$ $R_G = 6\Omega$	$t_{d(on)}$	--	7	15	nS
Turn-On Rise Time		$t_r$	--	55	80	
Turn-Off Delay Time		$t_{d(off)}$	--	16	60	
Turn-Off Fall Time		$t_f$	--	10	25	
Input Capacitance	$V_{DS} = 10V, V_{GS} = 0V,$ $f = 1.0MHz$	$C_{iss}$	--	450	--	pF
Output Capacitance		$C_{oss}$	--	70	--	
Reverse Transfer Capacitance		$C_{rss}$	--	43	--	
<b>Source-Drain Diode</b>						
Max. Diode Forward Current		$I_S$	--	--	1.6	A
Diode Forward Voltage	$I_S = 1.0A, V_{GS} = 0V$	$V_{SD}$	--	0.75	1.2	V

Note : pulse test: pulse width  $\leq 300\mu S$ , duty cycle  $\leq 2\%$



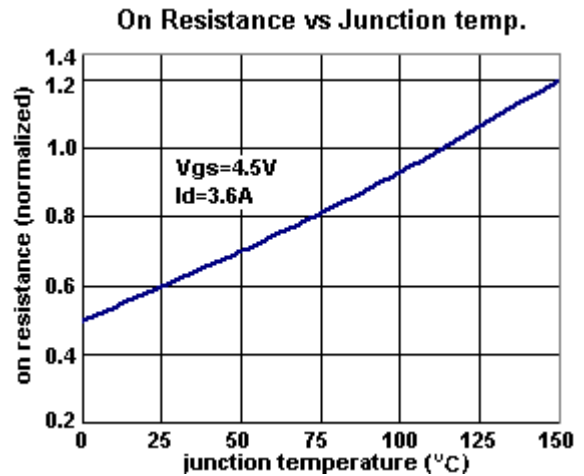
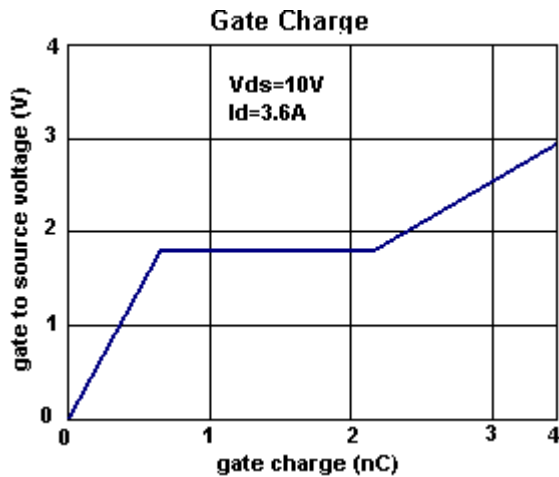
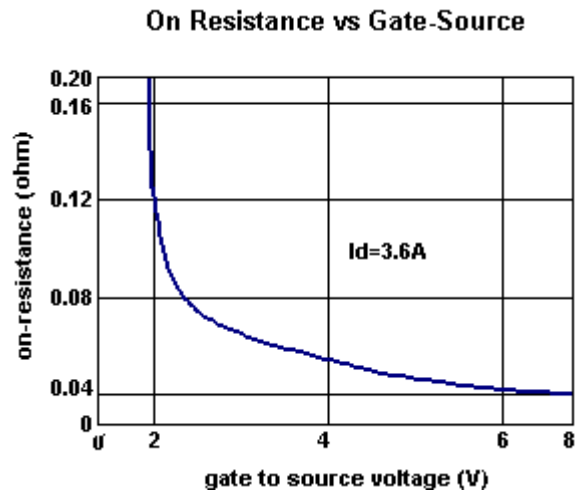
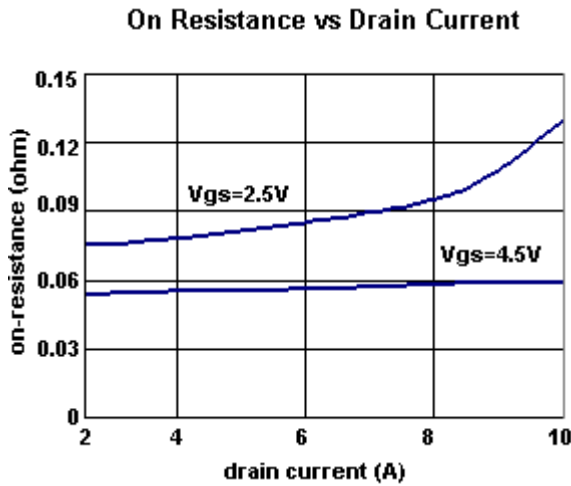
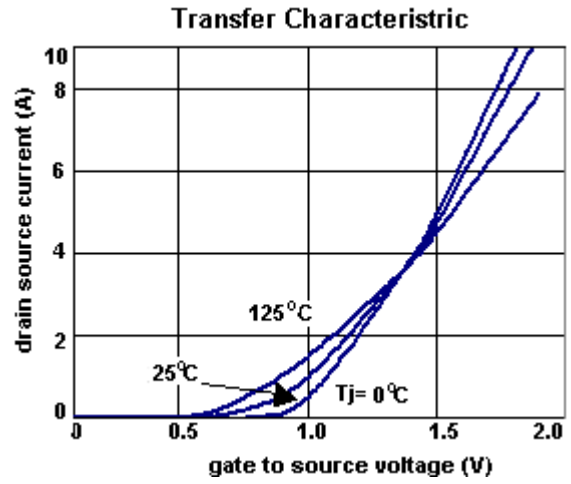
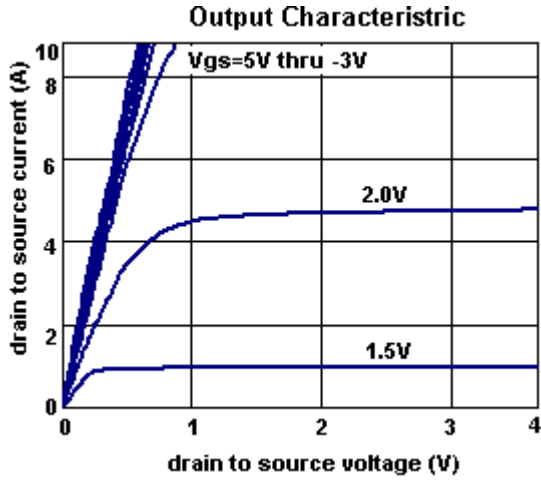
Switching Test Circuit



Switchin Waveforms

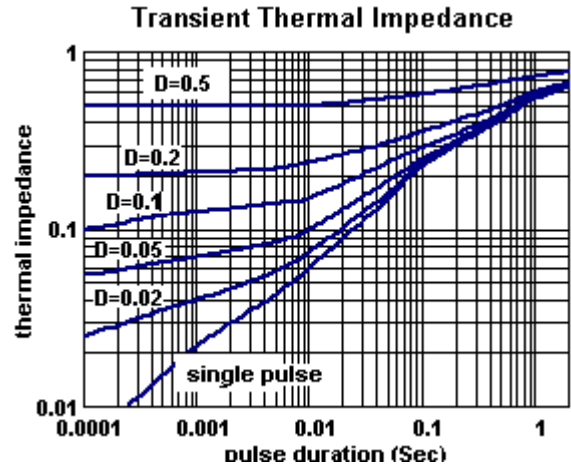
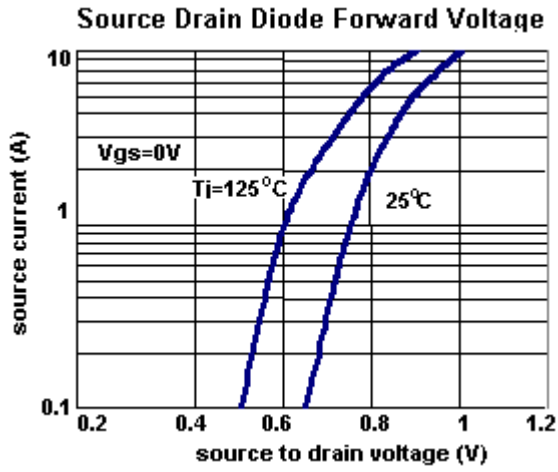


**Typical Characteristics Curve** ( $T_a = 25^\circ\text{C}$  unless otherwise noted)

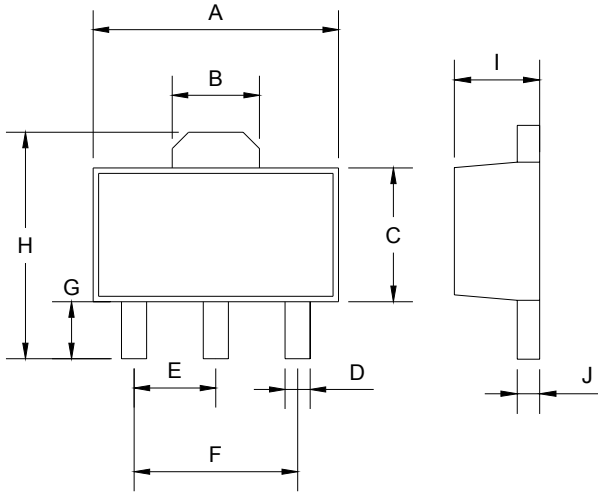




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## SOT-89 Mechanical Drawing



SOT-89 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.40	4.60	0.173	0.181
B	1.50	1.7	0.059	0.070
C	2.30	2.60	0.090	0.102
D	0.40	0.52	0.016	0.020
E	1.50	1.50	0.059	0.059
F	3.00	3.00	0.118	0.118
G	0.89	1.20	0.035	0.047
H	4.05	4.25	0.159	0.167
I	1.4	1.6	0.055	0.068
J	0.35	0.44	0.014	0.017