TECH PUBLIC
台舟电子

TPM4003NES3

30V N-Channel MOSFET

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Product Summary

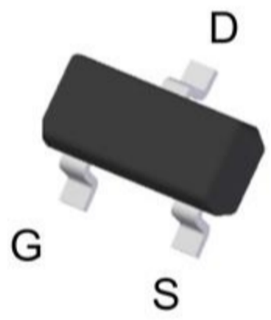
* On-State Resistance : $R_{DS}(on)$=1.5Ω @V_{GS} =4.5V
* Driving Voltage : 2.5V
* Environmentally Friendly : EU RoHS Compliant, Pb Free

Application

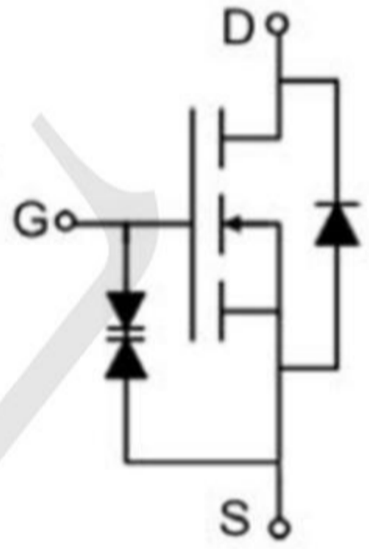
* Load/Power switch
* Interfacing, logic switching
* Battery management for ultra protable electronics

Package and Pin Configuration

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Circuit diagram



Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNITS
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	±20	V
Drain Current (DC)	I_D	0.5	A
Drain Current(Pulse) (*1)	I_{DP}	1	A
Channel Power Dissipation (*2)	P_d	0.4	W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{stg}	-55~+150	℃

Electrical Characteristics (T_A=25°C unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D= 250μA, V_{GS}= 0V	30	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}= 30V, V_{GS}= 0V	-	-	1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}= ±15V, V_{DS}= 0V	-	-	±10	μA
Gate Threshold Voltage	$V_{GS(off)}$	I_D= 250uA, V_{DS}= V_{GS}	0.9	1.3	1.7	V
Drain-Source On Resistance	$R_{DS(on)}$	V_{GS}= 4.5V, I_D= 100mA	-	0.6	1.5	Ω
		V_{GS}= 2.5V, I_D= 100mA	-	1.5	4	Ω
Input Capacitance	Ciss	V_{DS}= 10V, V_{GS}= 0V f= 1MHz	-	40	-	pF
Output Capacitance	Coss		-	12	-	pF
Reverse Transfer Capacitance	Crss		-	6	-	pF
Turn-on Delay Time	$t_{d(on)}$	V_{DD}= 10V, I_D= 200mA V_{GS}= 10V	-	7	-	ns
Rise Time	t_r		-	5	-	ns
Turn-off Delay Time	$t_{d(off)}$		-	30	-	ns
Fall Time	t_f		-	8	-	ns
Total Gate Charge	Q_g	V_{DS}= 10V, I_D= 250mA V_{GS}= 10V	-	0.78	-	nC
Gate-Source Charge	Q_{gs}		-	0.1	-	nC
Gate-Drain Charge	Q_{gd}		-	0.16	-	nC
Diode Forward Voltage	V_{SD}	I_S= 100mA, V_{GS}= 0V	-	0.7	1.1	V

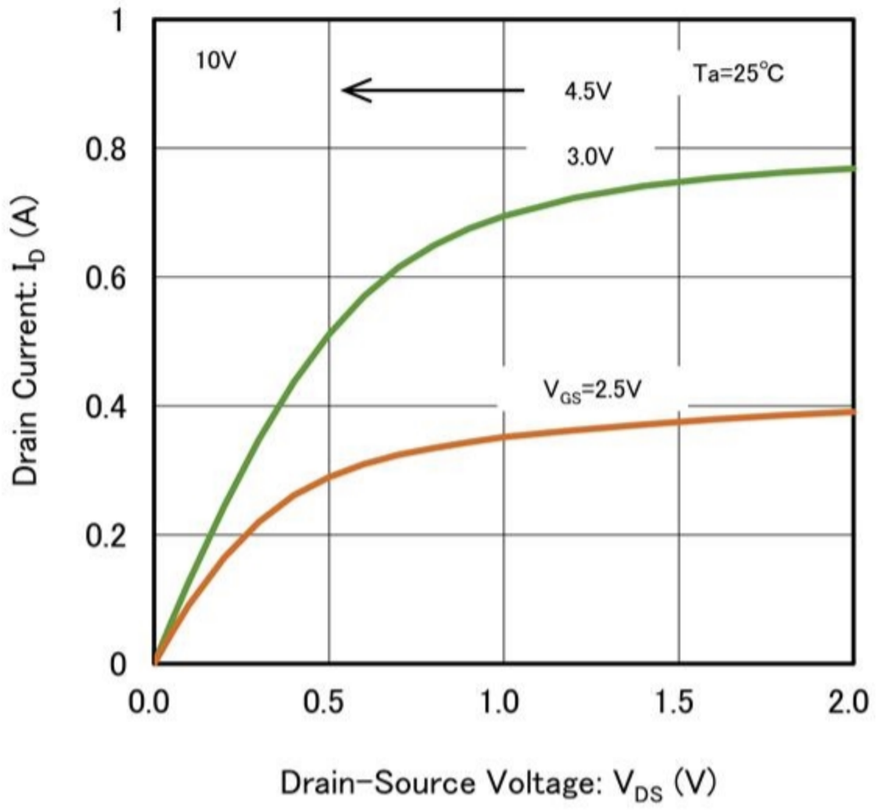
Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design

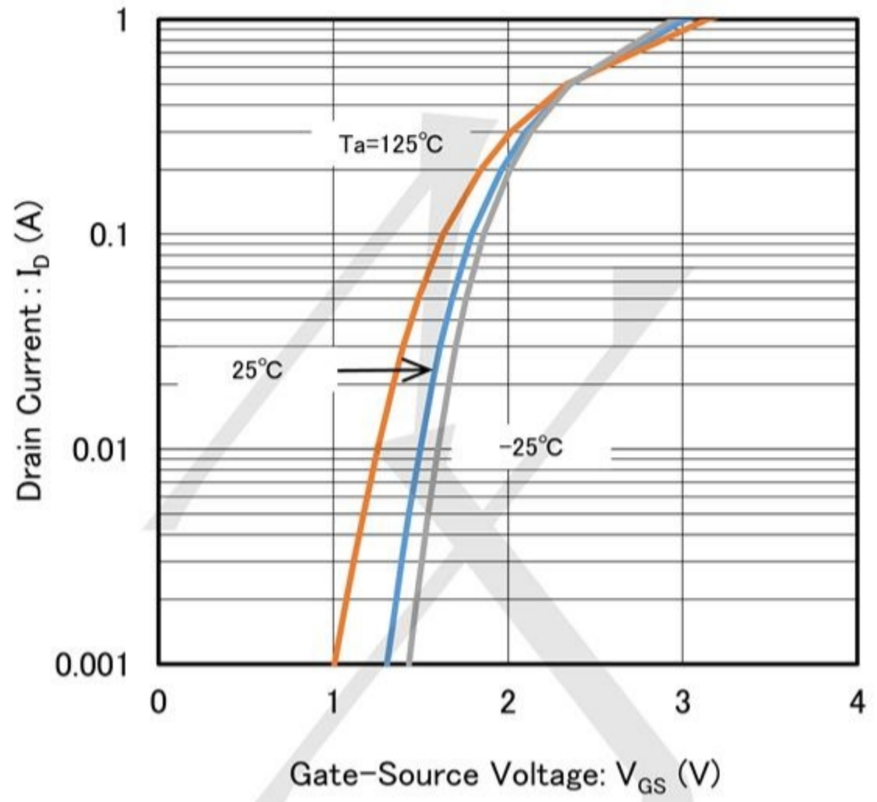
Typical Electrical and Thermal Characteristic Curves

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(1) Drain Current vs. Drain-Source Voltage



(2) Drain Current vs. Gate-Source Voltage



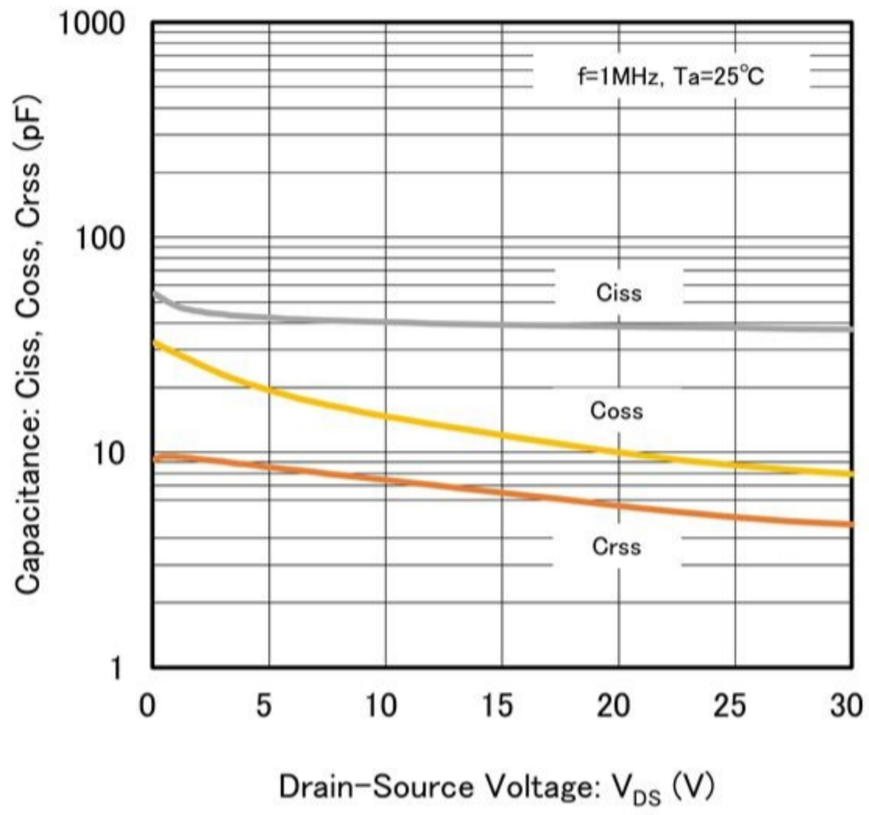
(3) Drain-Source On Resistance vs. Gate-Source Voltage

(4) Drain-Source On Resistance vs. Ambient Temperature

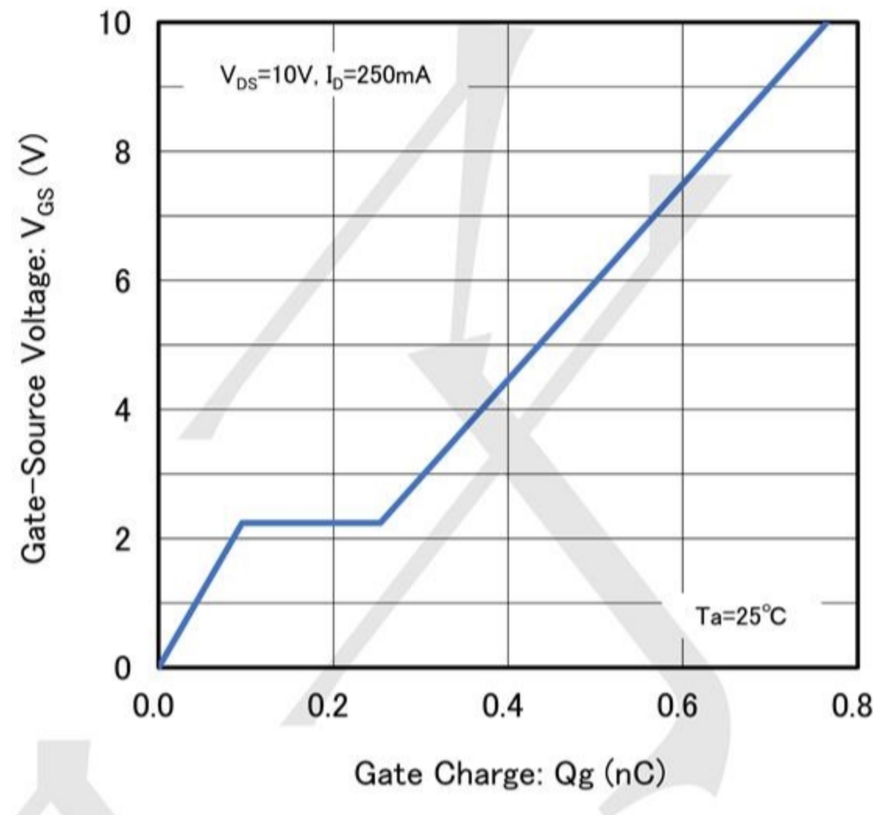
(5) Drain-Source On Resistance vs. Drain Current

(6) Source Current vs. Diode Forward Voltage

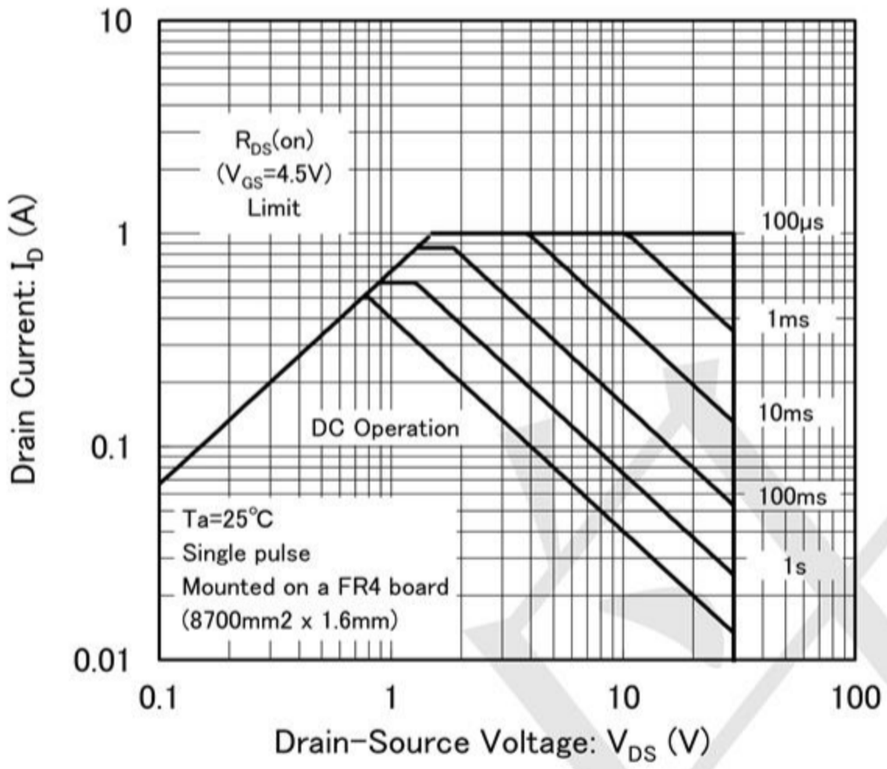
(7) Ciss, Coss, Crss vs. Drain-Source Voltage



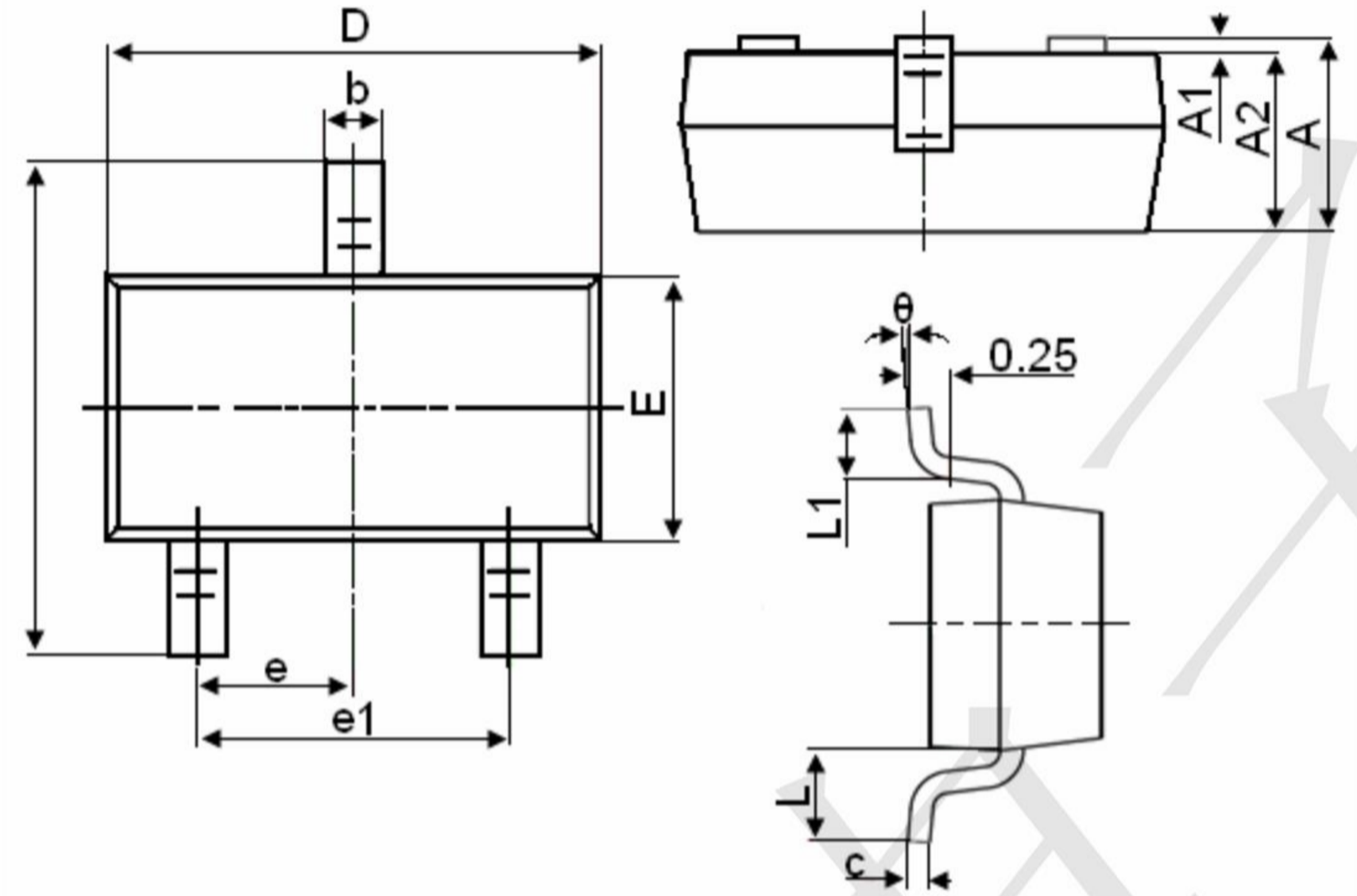
(8) Gate-Source Voltage vs. Gate Charge



(9) Area of Safe Operation



Package Outline Dimensions (SOT-23)



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Notes

1. All dimensions are in millimeters.
2. Tolerance ±0.10mm (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.