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TPM3400AS3
N-Channel Enhancement Mode Power MOSFET

General Features

- V_{DS} = 30V, I_D = 5.8A

  $R_{DS(ON)}$ < 59mΩ @ V_{GS}=2.5V

  $R_{DS(ON)}$ < 45mΩ @ V_{GS}=4.5V
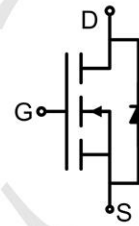
  $R_{DS(ON)}$ < 41mΩ @ V_{GS}=10V

Application

- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable
- Logic Level Shift

Package and Pin Configuration

SOT23

Circuit diagram

Absolute Maximum Ratings (T_A=25℃ unless otherwise noted)

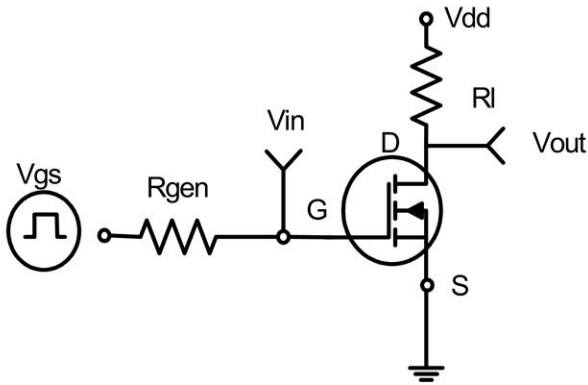| Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current-Continuous	I_D	5.8	A
Drain Current-Pulsed [Note 1]	I_{DM}	30	A
Maximum Power Dissipation	P_D	1.4	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	℃

Thermal Characteristic

Thermal Resistance,Junction-to-Ambient [Note 2]	$R_{\theta JA}$	89	℃/W

Electrical Characteristics (T_A=25℃ unless otherwise noted)

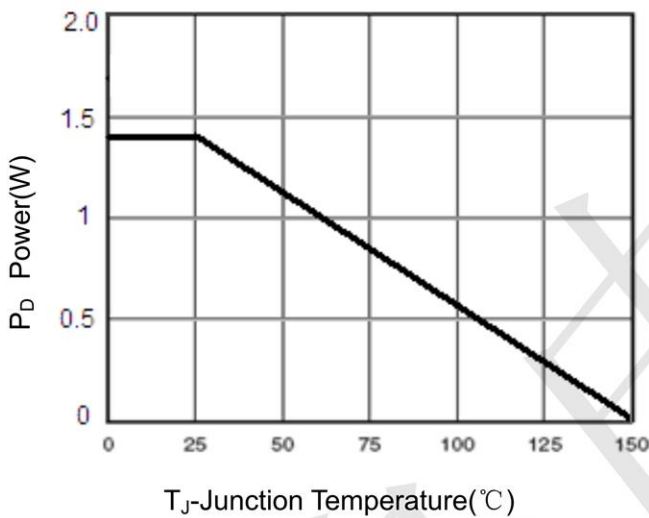| Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	30		-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
On Characteristics [Note 3]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.7	0.9	1.4	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=2.5V, I_D=4A	-	45	59	mΩ
		V_{GS}=4.5V, I_D=5A	-	31	45	mΩ
		V_{GS}=10V, I_D=5.8A	-	28	41	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=5A	10	-	-	S
Dynamic Characteristics [Note 4]						
Input Capacitance	C_{Iss}	V_{DS}=15V, V_{GS}=0V, F=1.0MHz	-	820	-	PF
Output Capacitance	C_{oss}		-	99	-	PF
Reverse Transfer Capacitance	C_{rss}		-	77	-	PF
Switching Characteristics [Note 4]						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=15V, R_L=2.7Ω V_{GS}=10V, R_{GEN}=3Ω	-	3.3	-	nS
Turn-on Rise Time	t_r		-	4.8	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	26	-	nS
Turn-Off Fall Time	t_f		-	4	-	nS
Total Gate Charge	Q_g	V_{DS}=15V, I_D=5.8A, V_{GS}=4.5V	-	9.5	-	nC
Gate-Source Charge	Q_{gs}		-	1.5	-	nC
Gate-Drain Charge	Q_{gd}		-	3	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage [Note 3]	V_{SD}	V_{GS}=0V, I_S=5.8A	-	-	1.2	V
Diode Forward Current [Note 2]	I_S		-	-	5.8	A

Typical Electrical and Thermal Characteristics
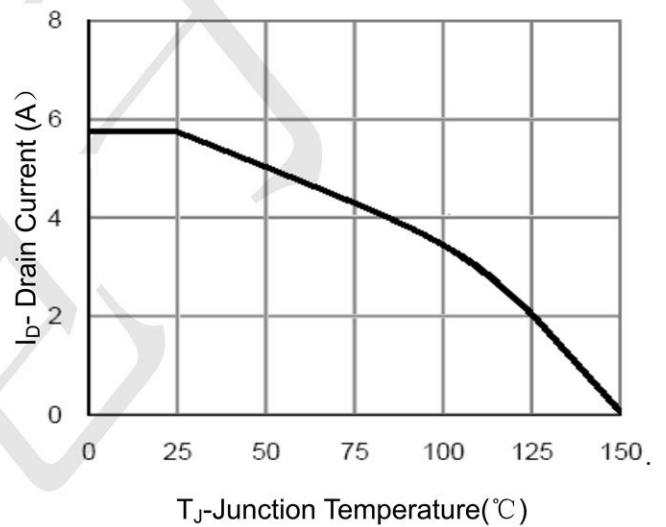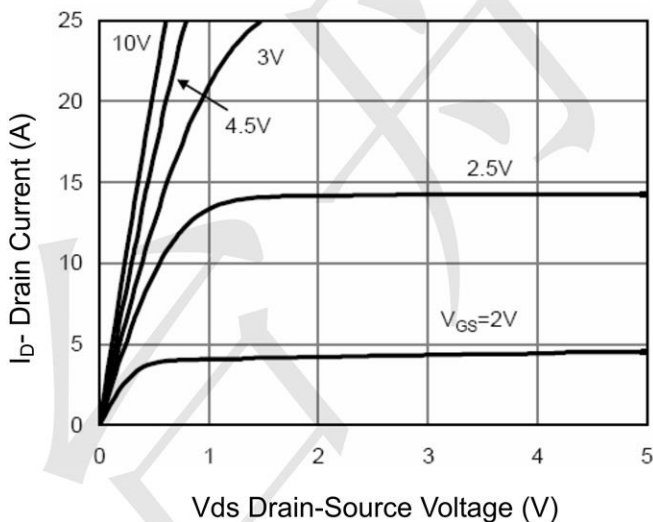
Figure 1:Switching Test Circuit
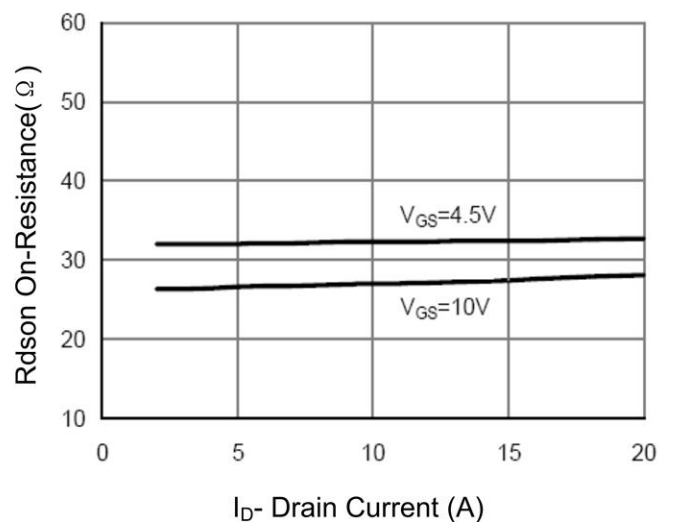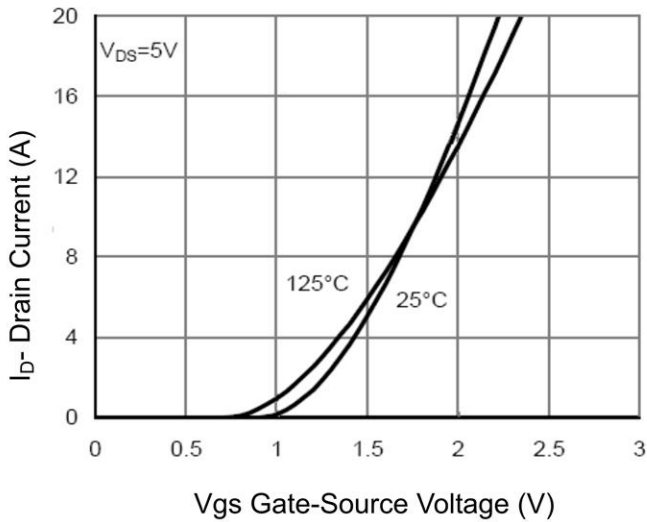
Figure 2:Switching Waveforms

Figure 3 Power Dissipation
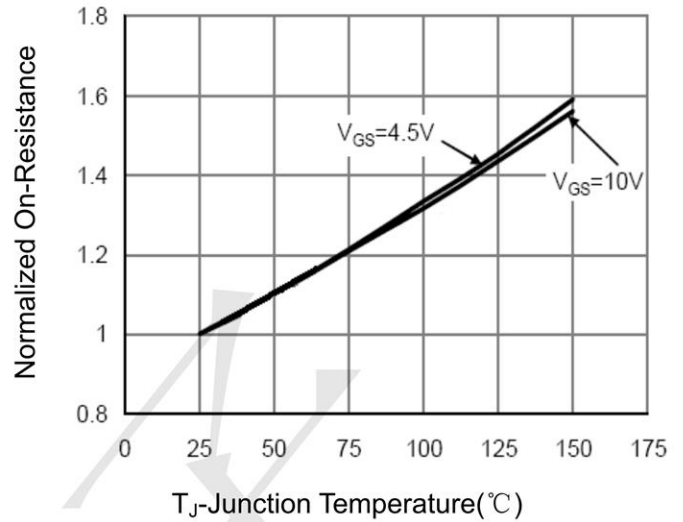
Figure 4 Drain Current
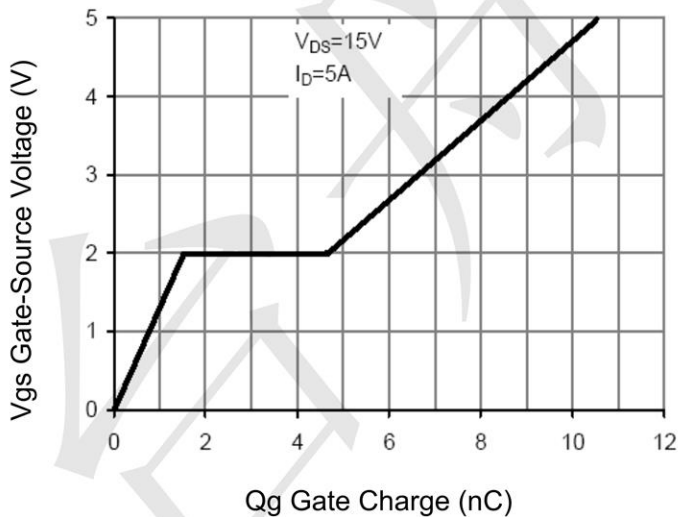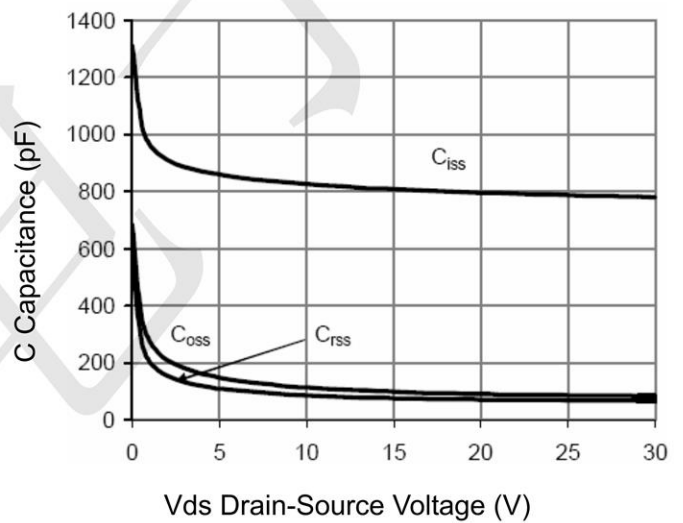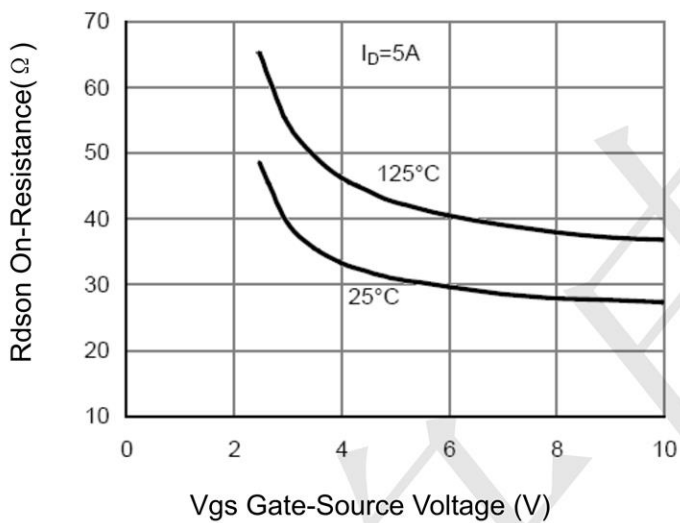
Figure 5 Output Characteristics

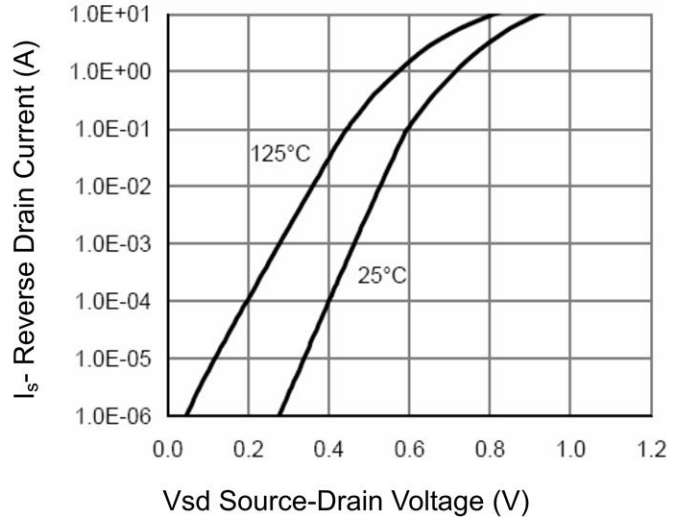**Figure 6 Drain-Source On-Resistance**

Figure 7 Transfer Characteristics

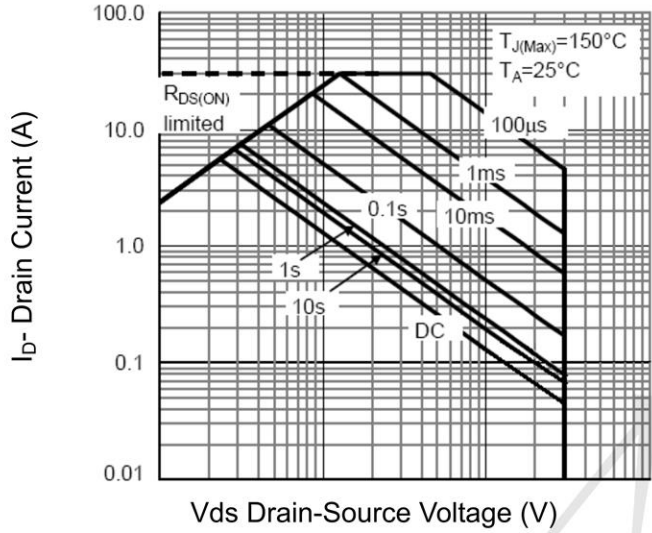**Figure 8 Drain-Source On-Resistance**

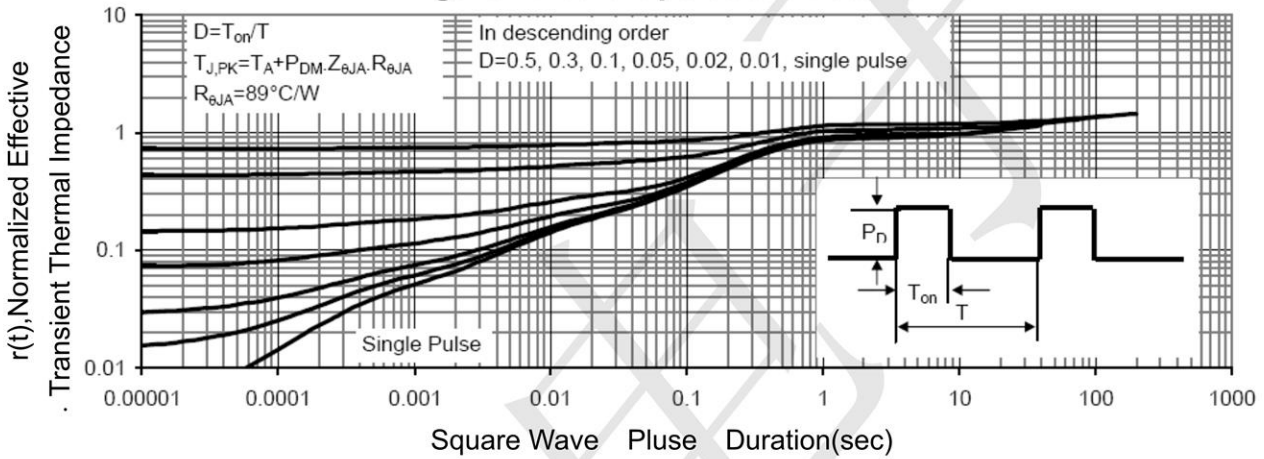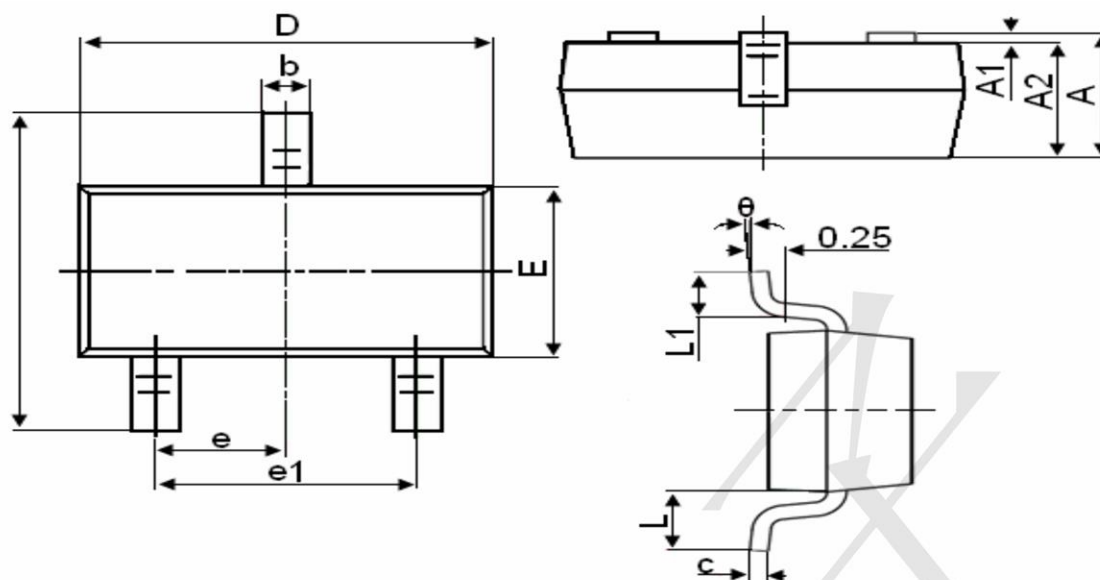**Figure 11 Gate Charge**

Figure 12 Source- Drain Diode Forward

Figure 13 Safe Operation Area

Figure 14 Normalized Maximum Transient Thermal Impedance

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°