TPM04K20BX

P-Channel Enhancement Mode Power MOSFET

Features

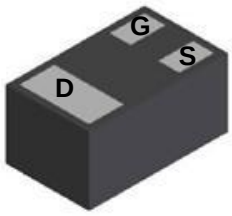
V_{DS}= -20V
I_D= -0.5A
$R_{DS(ON)}$≤ 345mΩ(V_{GS}=-4.5V)

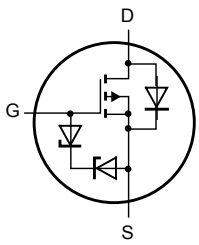
General Description

The TPM04K20BX is P-Channel enhancement MOSFET Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ .with low gate charge . This device is suitable for use in DC-DC conversion , power switch and charging circuit.

Package Information

Pin Configurations





P-Channel Enhancement Mode Power MOSFET

- **Absolute Maximum Ratings (@TA=25°C unless otherwise noted)**

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	-20	V
Gate Source Voltage		V_{GSS}	±8	V
Drain Current (Continuous) *AC	T_A=25°C	I_D	-0.5	A
	T_A=100°C		-0.4	
Drain Current (Pulse) *B		I_{DM}	-1.2	A
Power Dissipation		P_D	0.3	W
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~155	°C

- **Thermal Characteristics**

Parameter	Symbol	Ratings	Unit
Thermal Resistance ,Junction-to-Ambient	$R_{\theta JA}$	416	°C/W

- **Electrical Characteristics (@TA=25°C unless otherwise noted)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V，I_D=-250uA	-20	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V，V_{GS}=0V	--	--	-1	uA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS}，I_{DS}=-250uA	-0.4	--	-1.2	V
Gate Leakage Current	I_{GSS}	V_{GS}=±8V，V_{DS}=0V	--	--	±10	uA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS}=-4.5V，I_D=-0.3A	--	--	345	mΩ
		V_{GS}=-2.5V，I_D=-0.3A	--	--	555	mΩ
Total Gate Charge	Q_g	V_{GS}=-4.5V，V_{DS}=-10V，I_D=-0.45A	--	0.9	--	nC
Gate- Source Charge	Q_{gs}		--	0.16	--	nC
Gate- Drain Charge	Q_{gd}		--	0.27	--	nC
Tum-on Delay Time	$t_{d(on)}$	V_{GS}=-4.5V，V_{DS}=-10V，R_{GEN}=6Ω，I_D=-0.45A	--	45	--	ns
Turn-on Rise Time	t_r		--	140	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	1500	--	ns
Turn-off Fall Time	t_f		--	2100	--	ns
Input Capacitance	C_{iss}	V_{GS}=0V，V_{DS}=-10V，f=1MHZ	--	74.5	--	pF
Output Capacitance	C_{oss}		--	10.8	--	pF
Reverse Transfer Capacitance	C_{rss}		--	10.2	--	pF

- **Reverse Diode Characteristics (@TA=25°C unless otherwise noted)**

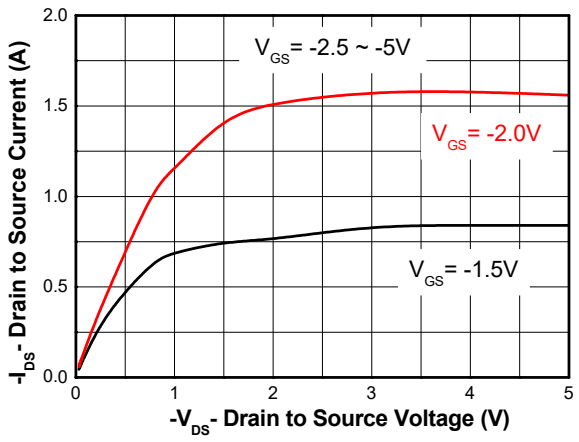
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Continuous Diode Forward Current	I_{SD}	V_G=V_D=0V , Force Current	--	--	-0.5	A
Diode Forward Voltage	V_{SD}	I_{SD}=-0.5A，V_{GS}=0V	--	--	-1.2	V

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR- 4 board with 2oz. Copper, in a still air environment with TA=25C. The value in any given application depends on the user's specific board design.

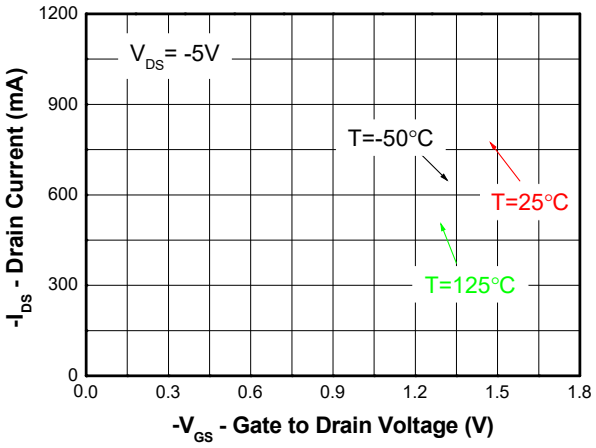
B: Repetitive rating, pulse width limited by junction temperature .

C: The current rating is based on the t< 10s junction to ambient thermal resistance rating.

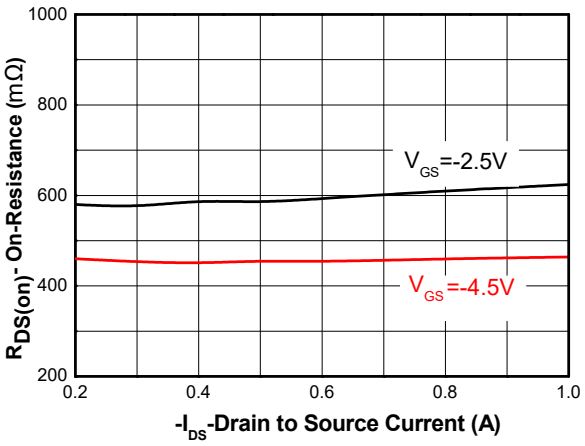
TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS



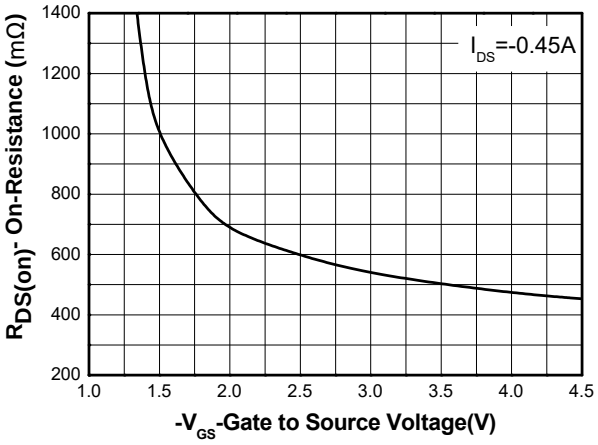
Output characteristics



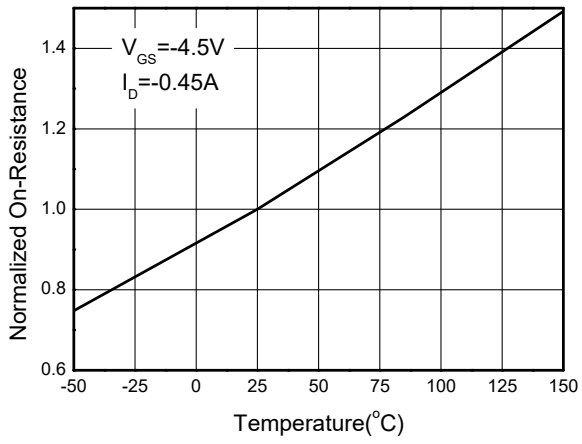
Transfer characteristics



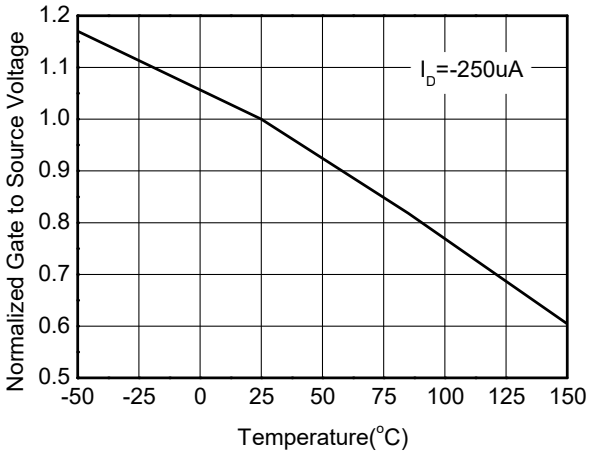
On-Resistance vs. Drain current



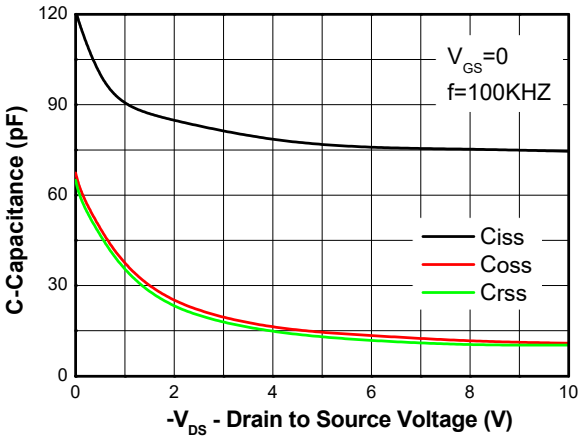
On-Resistance vs. Gate-to-Source voltage



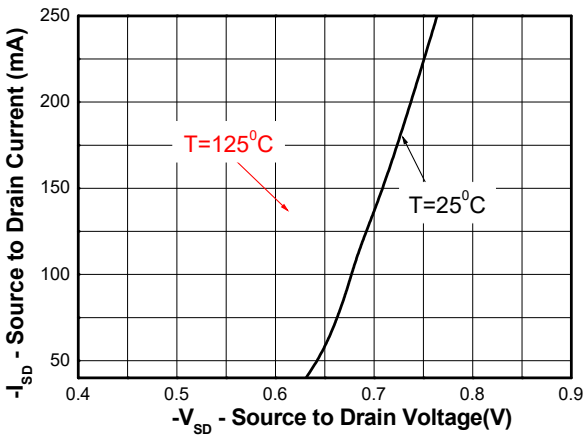
On-Resistance vs. Junction temperature



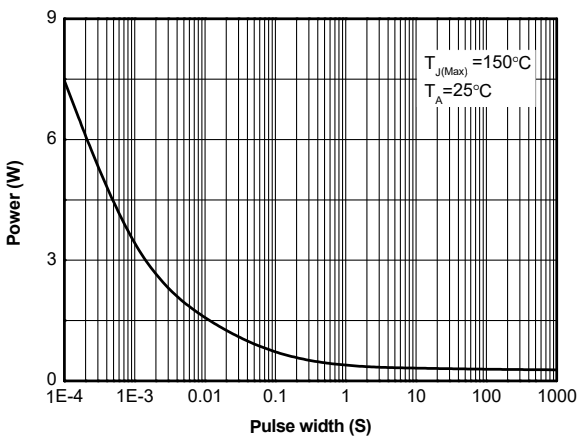
Threshold voltage vs. Temperature



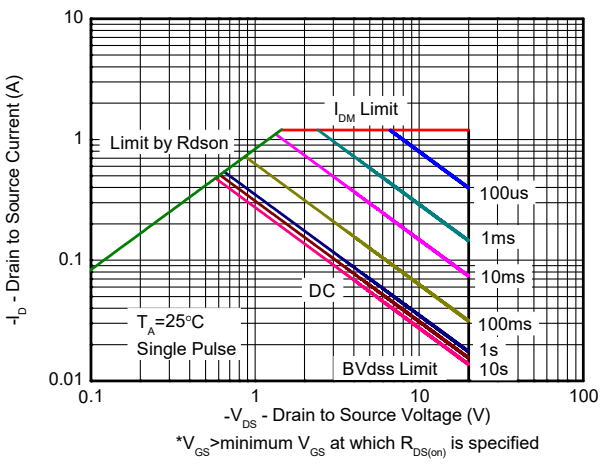
Capacitance



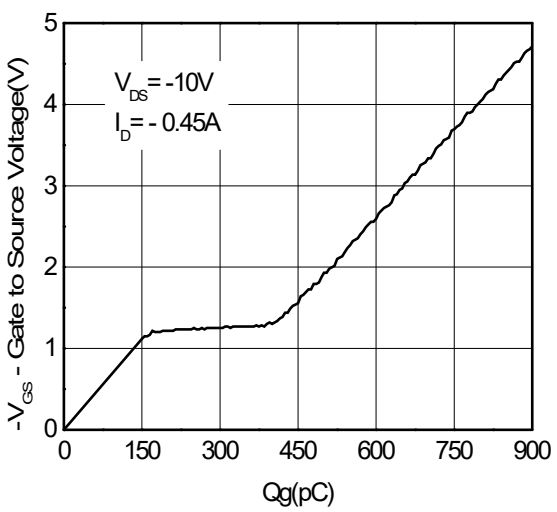
Body diode forward voltage

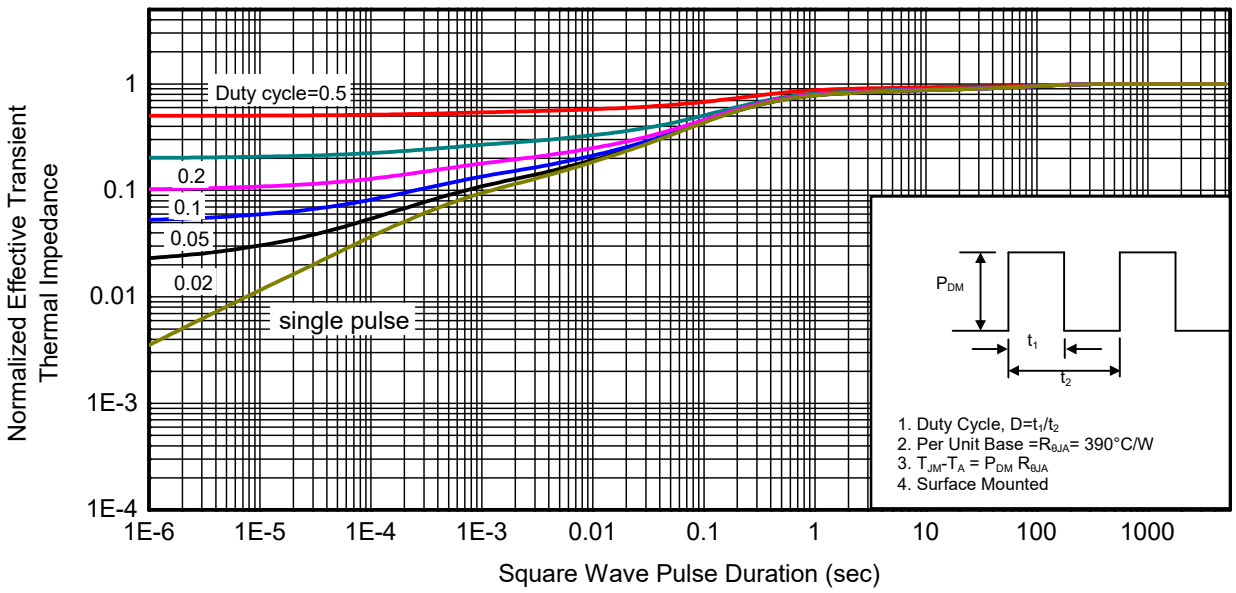


Single pulse power



Safe operating power





Transient thermal response (Junction-to-Ambient)

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