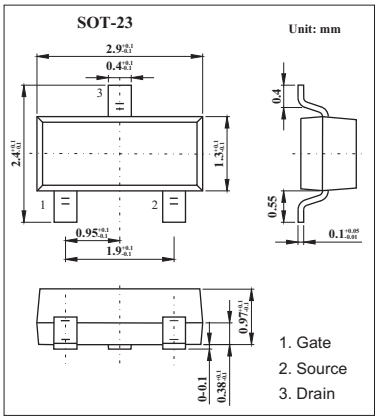
N-Channel Power MOSFET

XP151A13

■ Features

- Low on-state resistance :
  $R_{DS(on)}$ = 0.1Ω Max (V_{GS} = 4.5V)
  $R_{DS(on)}$ = 0.14Ω Max (V_{GS} = 2.5V)
  $R_{DS(on)}$ = 0.25Ω Max (V_{GS} = 1.5V)
- Ultra high-speed switching
- Gate Protect Diode Built-in



■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±8	V
Drain Current-Continuous	I_D	1	A
Drain Current -Pulse	I_{DP}	4	A
Maximum Power Dissipation *	P_D	0.5	W
Thermal Resistance,Junction-to-Ambient	$R_{\theta JA}$	250	℃/W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	- 55 to 150	℃

* When implemented on a ceramic PCB

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS} = 20V , V_{DS} = 0V			10	μA
Gate-Body Leakage	I_{GSS}	V_{DS} = ±8V , V_{GS} = 0V			±10	μA
Gate Source cutoff Voltage	$V_{gs(off)}$	I_D=1mA,V_{DS}=10V	0.5		1.2	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = 4.5V , I_D =0.5A		0.075	0.1	Ω
		V_{GS} = 2.5V , I_D = 0.5A		0.1	0.14	
		V_{GS} = 1.5V , I_D = 0.1A		0.17	0.25	
Forward Transfer Adittance	|Yfs|	I_D=0.5A,V_{DS}=10V		4.2		S
Body Drain Diode Forward Voltage	V_F	I_F=1A,,V_{GS}=0V		0.8	1.1	V
Input Capacitance	C_{ISS}	V_{DS} = 10V , V_{GS} = 0V,f = 1.0MHz		220		pF
Output Capacitance	C_{OSS}			120		
Reverse Transfer Capacitance	C_{RSS}			45		
Turn-On Delay Time	$t_{d(on)}$	V_{GS}= 5V , I_D = 0.5A ، V_{DD}=10V		10		ns
Rise Time	t_r			15		ns
Turn-Off Delay Time	$t_{d(off)}$			75		ns
Fall Time	t_f			65		ns

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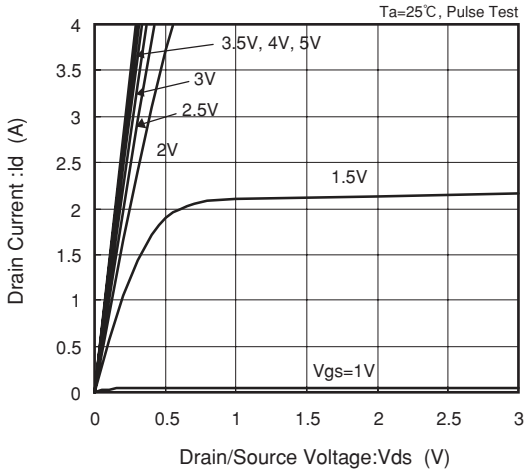
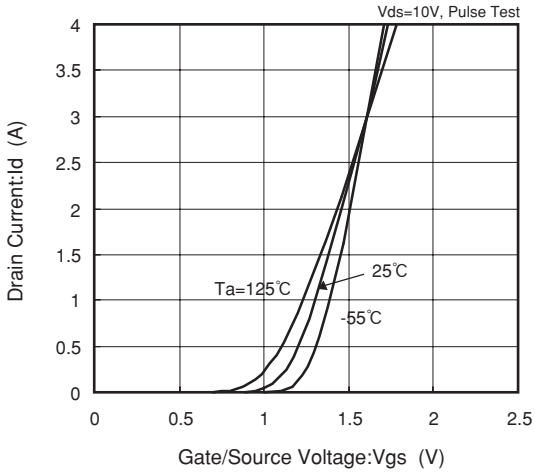
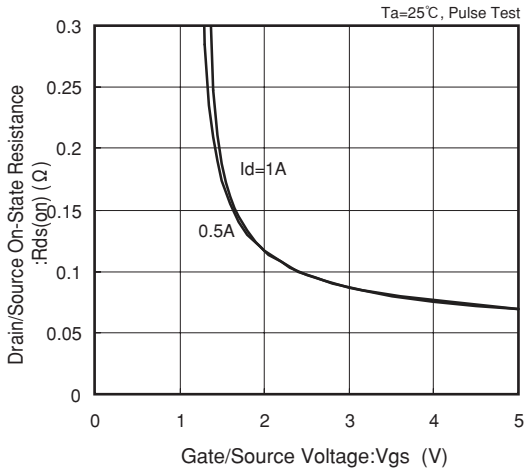
Drain Current vs. Drain/Source Voltage



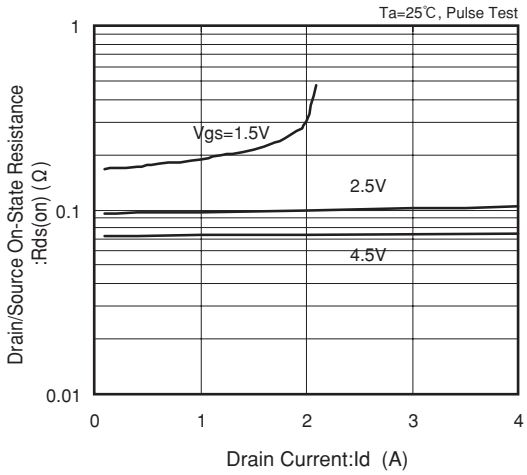
Drain Current vs. Gate/Source Voltage



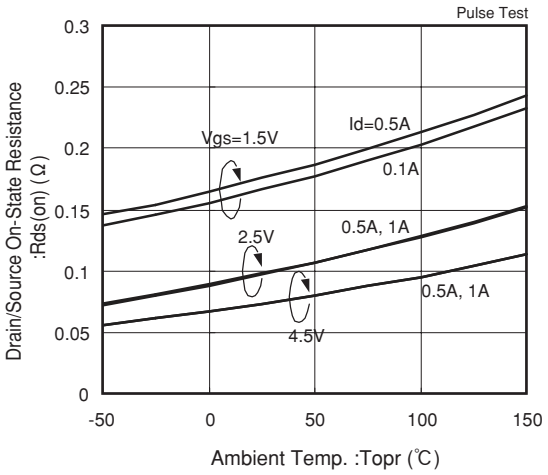
Drain/Source On-State Resistance vs. Gate/Source Voltage



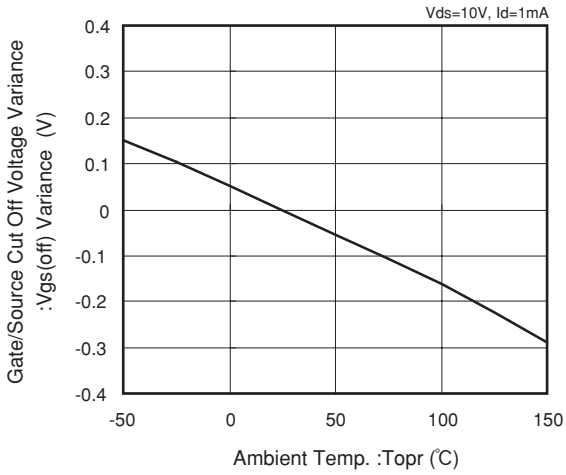
Drain/Source On-State Resistance vs. Drain Current



Drain/Source On-State Resistance vs. Ambient Temp.



Gate/Source Cut Off Voltage Variance vs. Ambient Temp.



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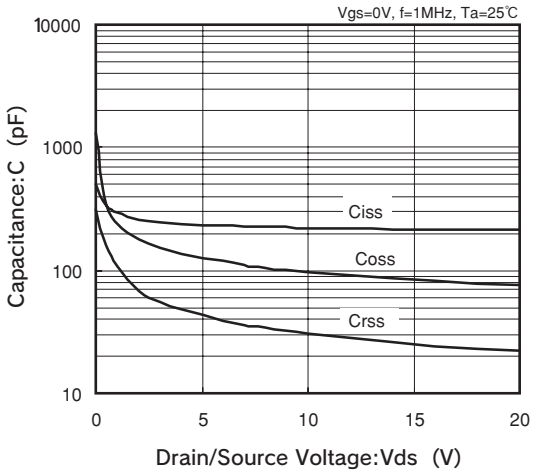
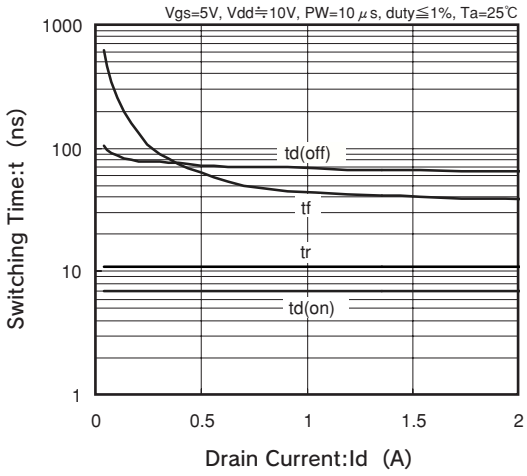
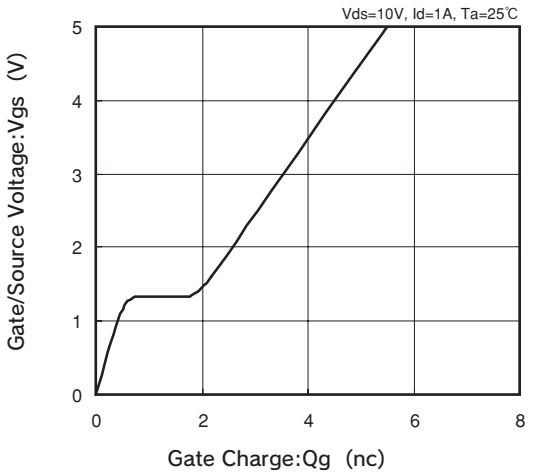
Capacitance vs. Drain/Source Voltage



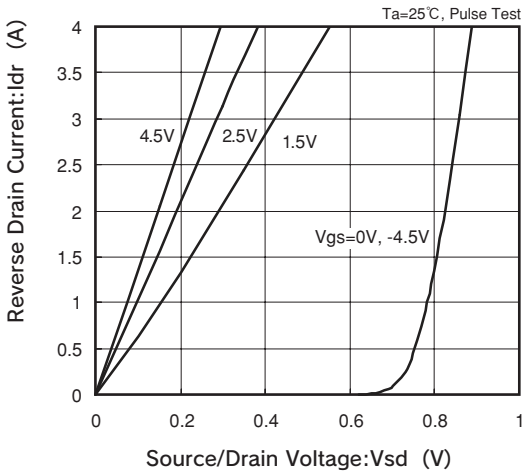
Switching Time vs. Drain Current



Gate/Source Voltage vs. Gate Charge



Reverse Drain Current vs. Source/Drain Voltage



Standardized Transition Thermal Resistance vs. Pulse Width