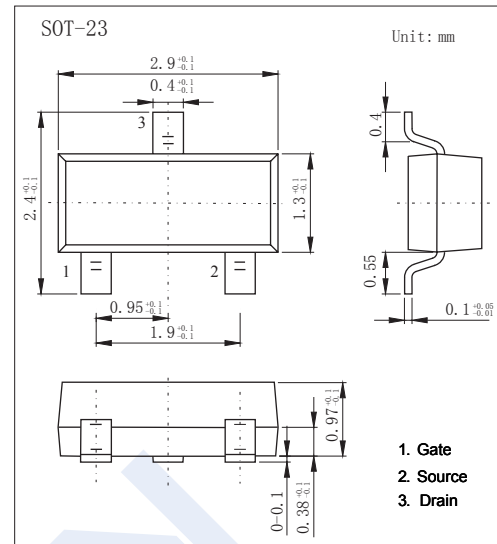


Silicon N-Channel Power MOSFET (Depletion Mode)

F501

■ Features

- $V_{DS} (V) = 500V$
- $I_D = 0.03 A$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 850 \Omega$ ($V_{GS} = 10V$)
- $R_{DS(ON)} < 750 \Omega$ ($V_{GS} = 0V$)

■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	500	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current	I_D	0.03	A
		0.024	
Pulsed Drain Current	I_{DM}	0.12	
Power Dissipation	P_D	0.5	W
Peak Diode Recovery dv/dt	dv/dt	5	V/ns
Thermal Resistance, Junction- to-Ambient	$R_{\theta JA}$	250	$^\circ C/W$
Maximum Temperature for Soldering	T_L	300	$^\circ C$
Junction Temperature	T_J	150	
Storage Temperature Range	T_{stg}	-55 to 150	

Silicon N-Channel Power MOSFET (Depletion Mode)

F501

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSX}	I _D =250 μA, V _{GS} =-5V	500			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =25V, V _{GS} =0V	1			mA
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Off-state Drain to Source Current	I _{D(off)}	V _{DS} =500V, V _{GS} =-5V			0.1	μA
		V _{DS} =400V, V _{GS} =-5V, Ta=125°C			10	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =3V, I _D =8 μA	-2.7		-1	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =0V, I _D =3mA			750	Ω
		V _{GS} =10V, I _D =16mA			850	
Forward Transconductance	g _{FS}	V _{DS} =50V, I _D =0.01A	0.008			S
Input Capacitance	C _{iss}	V _{GS} =-5V, V _{DS} =25V, f=1MHz		50		pF
Output Capacitance	C _{oss}			4.53		
Reverse Transfer Capacitance	C _{rss}			1.08		
Total Gate Charge	Q _g	V _{GS} =-5V to 5V, V _{DS} =400V, I _D =0.01A		1.14		nC
Gate Source Charge	Q _{gs}			0.5		
Gate Drain Charge	Q _{gd}			0.37		
Turn-On DelayTime	t _{d(on)}	V _{GS} =-5...7V, V _{DS} =300V, I _D =0.01A, R _{GEN} =6 Ω		9.9		ns
Turn-On Rise Time	t _r			55.8		
Turn-Off DelayTime	t _{d(off)}			56.4		
Turn-Off Fall Time	t _f			136		
Body Diode Reverse Recovery Time	t _{rr}	I _F =0.01A, di/dt=100A/μs, V _R =300V		243		nC
Body Diode Reverse Recovery Charge	Q _{rr}			636		
Maximum Body-Diode Continuous Current	I _S	Ta=25°C			0.025	A
Maximum Pulsed Current	I _{SM}				0.1	
Diode Forward Voltage	V _{SD}	I _F =16mA, V _{GS} =-5V			1.2	V

■ Marking

Marking	F501
---------	------

Silicon N-Channel Power MOSFET (Depletion Mode)

F501

■ Typical Characteristics

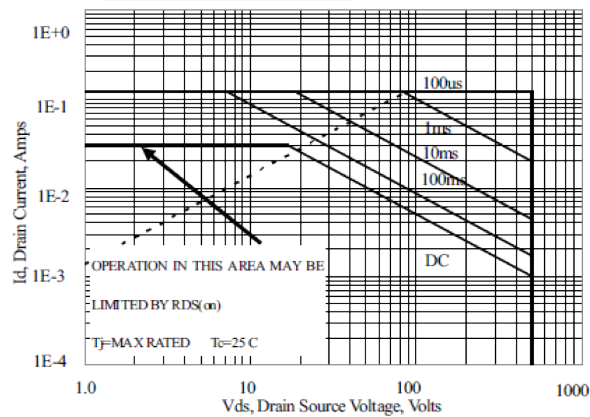


Figure 1 Maximum Forward Bias Safe Operating Area

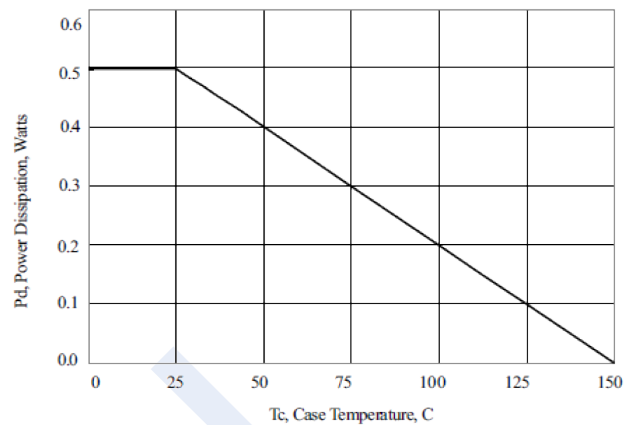


Figure 2 Maximum Power Dissipation vs Case Temperature

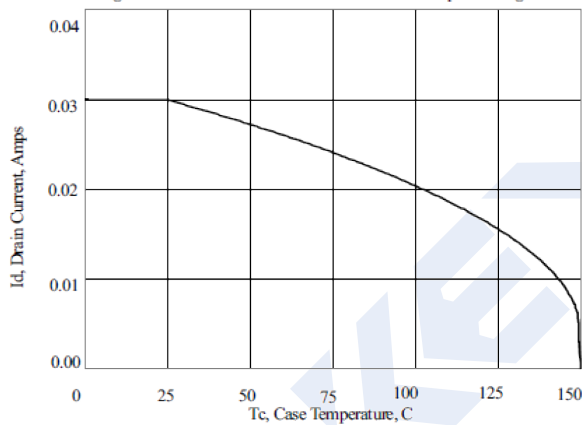


Figure 3 Maximum Continuous Drain Current vs Case Temperature

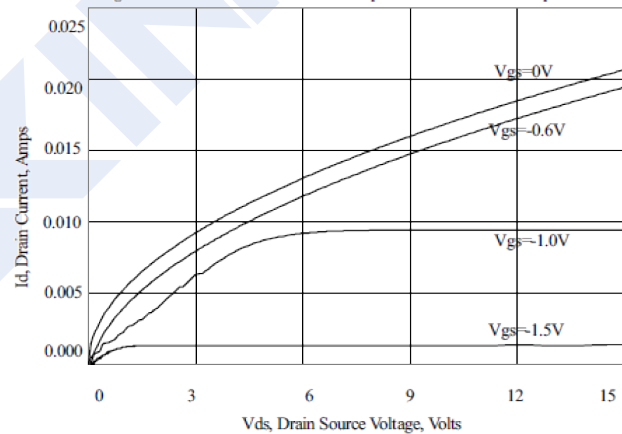


Figure 4 Typical Output Characteristics

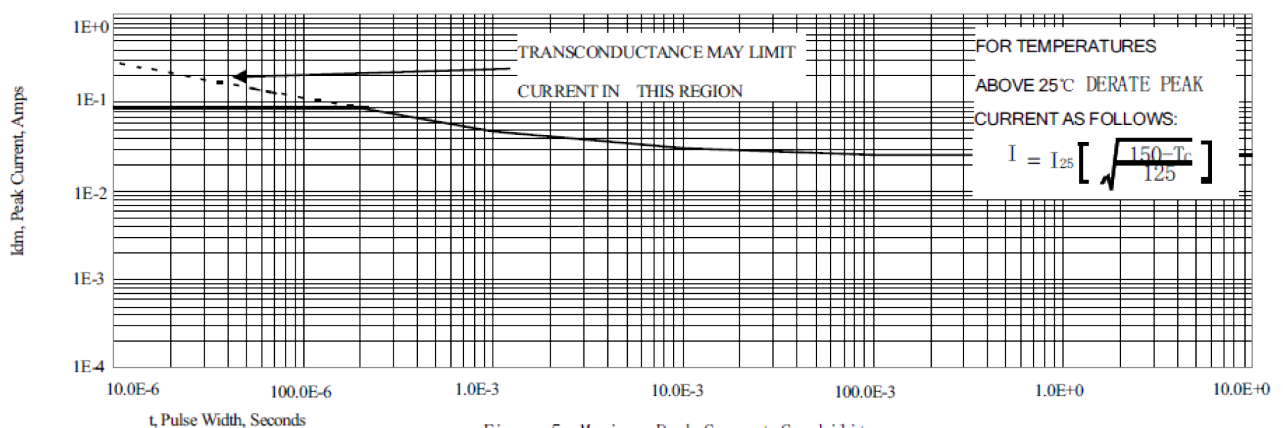


Figure 5 Maximum Peak Current Capability

Silicon N-Channel Power MOSFET (Depletion Mode)

F501

■ Typical Characteristics

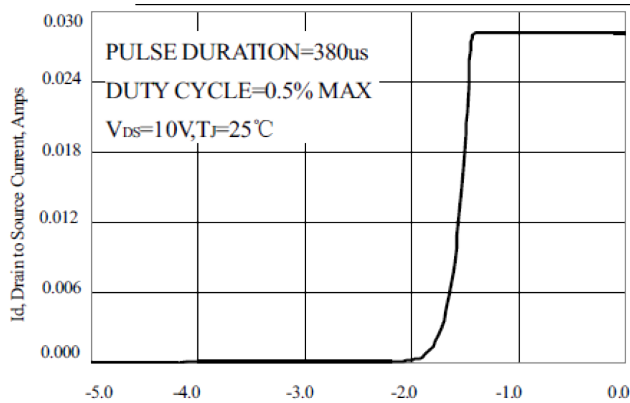


Figure 6 Typical Transfer Characteristics

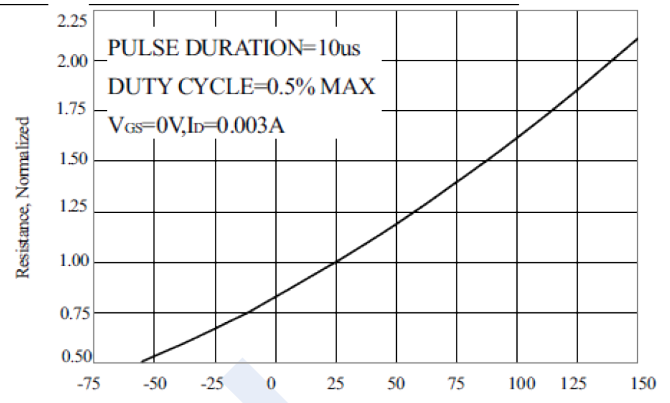


Figure 7 Typical Drain to Source ON Resistance vs Junction Temperature

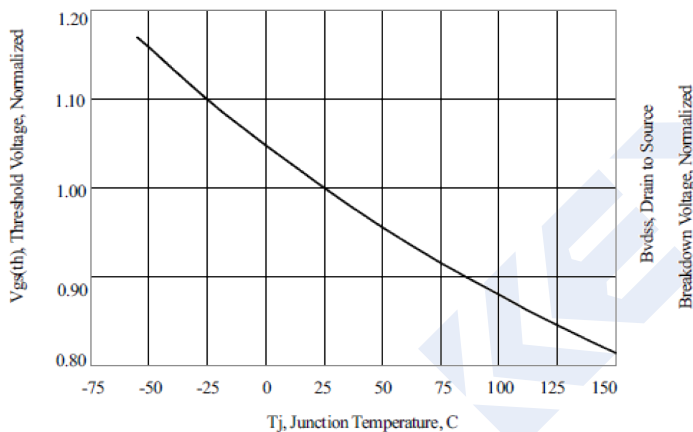


Figure 8 Typical Threshold Voltage vs Junction Temperature

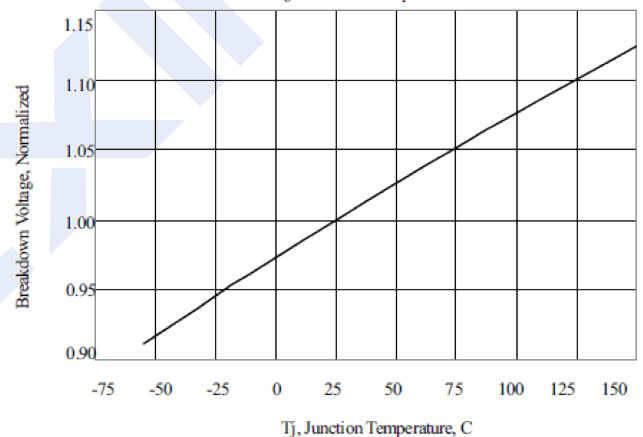


Figure 9 Typical Breakdown Voltage vs Junction Temperature

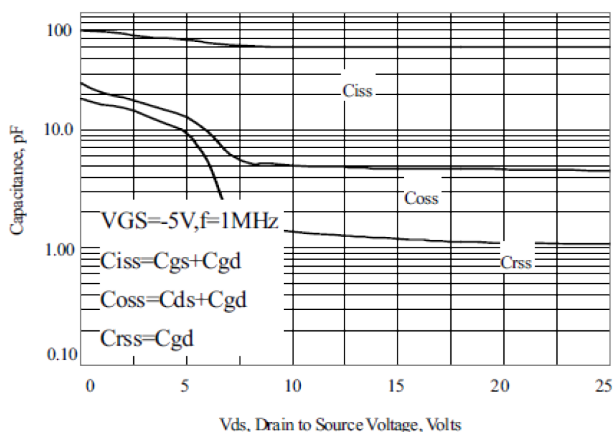


Figure 10 Typical Capacitance vs Drain to Source Voltage

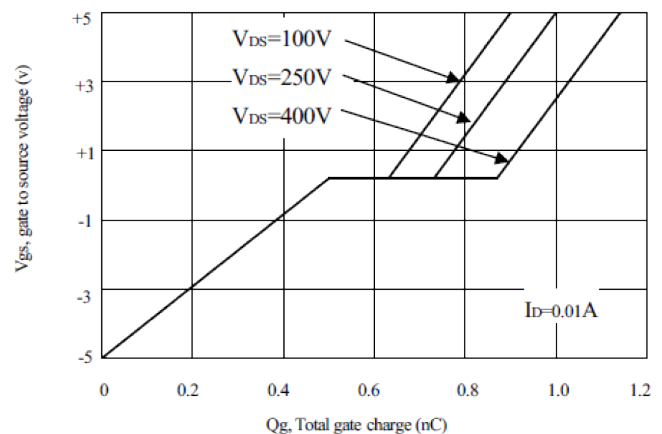


Figure 11 Typical Gate Charge vs Gate to Source Voltage

Silicon N-Channel Power MOSFET (Depletion Mode)

F501

■ Typical Characteristics

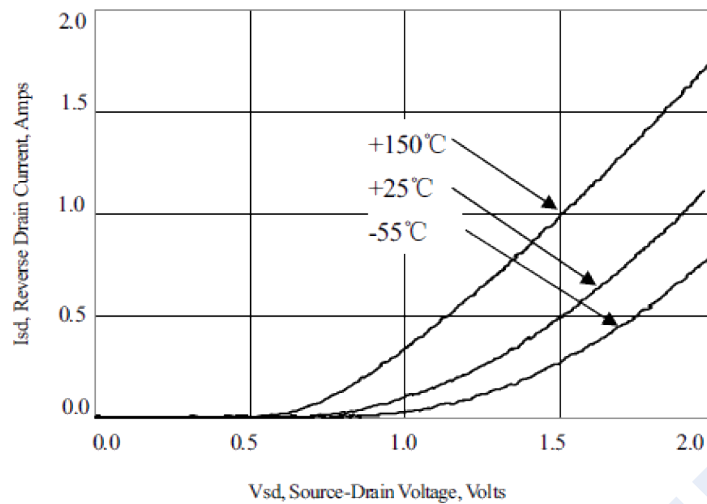


Figure 12 Typical Body Diode Transfer Characteristics