

N-Channel Enhancement Mode Power MOSFET

● Features

$V_{DS} = 20V,$

$I_D = 0.67A$

$R_{DS(ON)} @ V_{GS} = 4.5V, TYP 255m\Omega$

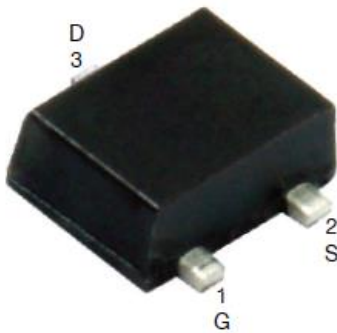
$R_{DS(ON)} @ V_{GS} = 2.5V, TYP 348m\Omega$

$R_{DS(ON)} @ V_{GS} = 1.8V, TYP 542m\Omega$

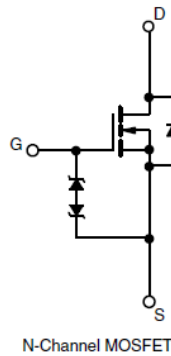
● General Description

- Load / power switching for portable devices
- Battery operated systems
- Power supply converter circuits

● Pin Configurations



SOT523



● Absolute Maximum Ratings @ $T_A=25^\circ C$ unless otherwise noted

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GSS}	± 10	V
Drain Current (Continuous) *AC	I_D	$T_A=25^\circ C$	0.67
		$T_A=70^\circ C$	0.53
Drain Current (Pulse) *B	I_{DM}	2	A
Power Dissipation	P_D	0.22	W
Operating Temperature/ Storage Temperature	T_J/T_{STG}	-55~150	$^\circ C$

● Thermal Resistance Ratings

Parameter	Symbol	Maximum	Unit
Maximum Junction-to-Ambient	R_{thJA}	530	$^\circ C/W$

● Electrical Characteristics @ $T_A=25^{\circ}\text{C}$ unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static *D						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$	--	--	1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_{DS} = 250\mu A$	0.4	--	0.85	V
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 8V, V_{DS} = 0V$	--	--	± 5	μA
Drain-Source On-state Resistance	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 0.5A$	--	255	332	m Ω
	$R_{DS(on)}$	$V_{GS} = 2.5V, I_D = 0.2A$	--	348	452	m Ω
	$R_{DS(on)}$	$V_{GS} = 1.8V, I_D = 0.1A$	--	542	705	m Ω
Diode Forward Voltage	V_{SD}	$I_{SD} = 0.5A, V_{GS} = 0V$	--	--	1.2	V
Diode Forward Current *AC	I_S	$T_A = 25^{\circ}\text{C}$	--	--	0.18	A
Switching						
Total Gate Charge	Q_g	$V_{DS} = 10V, I_D = 0.5A,$ $V_{GS} = 4.5V$	--	1	--	nC
Gate-Source Charge	Q_{gs}		--	0.16	--	nC
Gate-Drain Charge	Q_{gd}		--	0.13	--	nC
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 10V, I_D = 0.4A,$ $V_{GS} = 4.5V, R_{GEN} = 1\Omega$	--	2	--	ns
Turn-on Rise Time	t_r		--	14	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	16	--	ns
Turn-Off Fall Time	t_f		--	11	--	ns
Dynamic						
Input Capacitance	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V, f = 1.0\text{MHz}$	--	43	--	pF
Output Capacitance	C_{oss}		--	14	--	pF
Reverse Transfer Capacitance	C_{rss}		--	8	--	pF

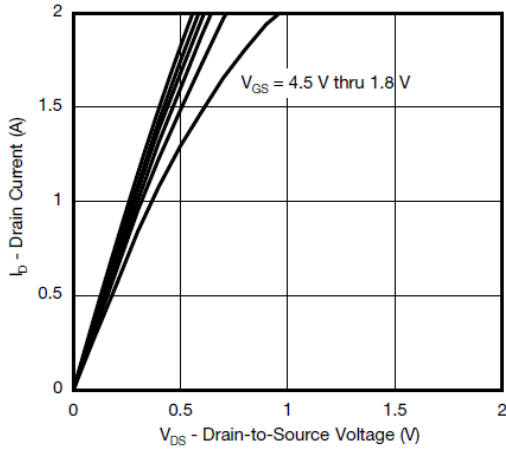
A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^{\circ}\text{C}$. The value in any given application depends on the user's specific board design.

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

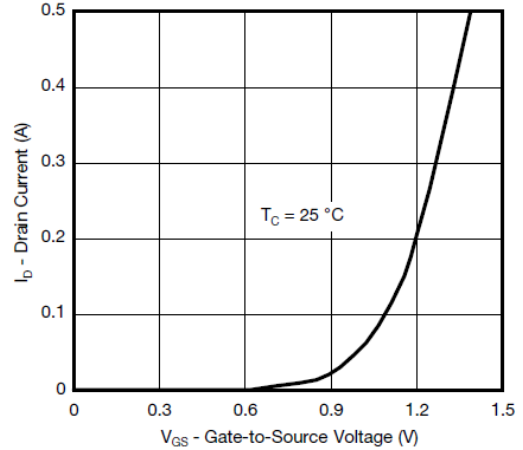
C: The current rating is based on the $t \leq 10\text{s}$ junction to ambient thermal resistance rating.

D: Pulse Test: Pulse Wide $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

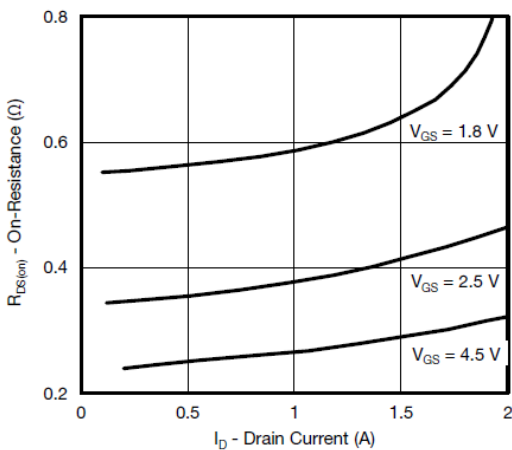
● Typical Performance Characteristics ((T_J = 25 °C, unless otherwise noted))



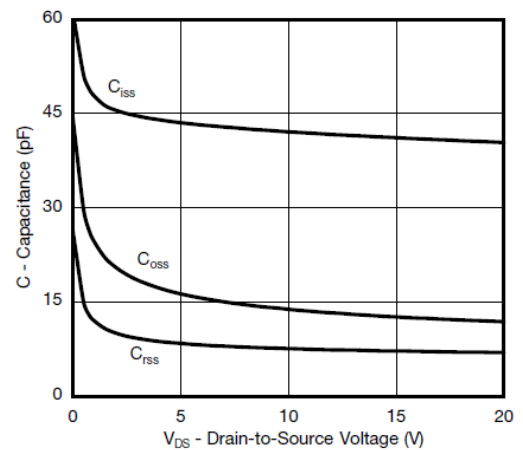
Output Characteristics



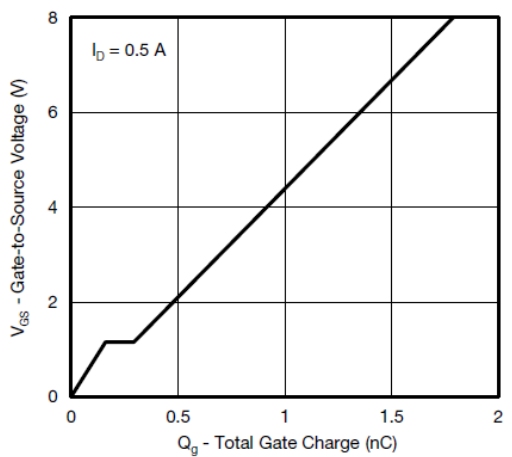
Transfer Characteristics



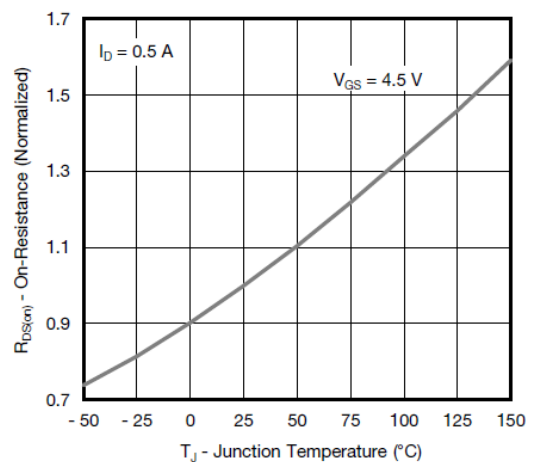
On-Resistance vs. Drain Current



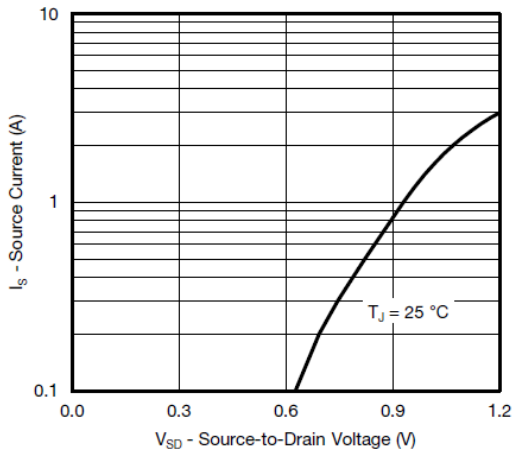
Capacitance



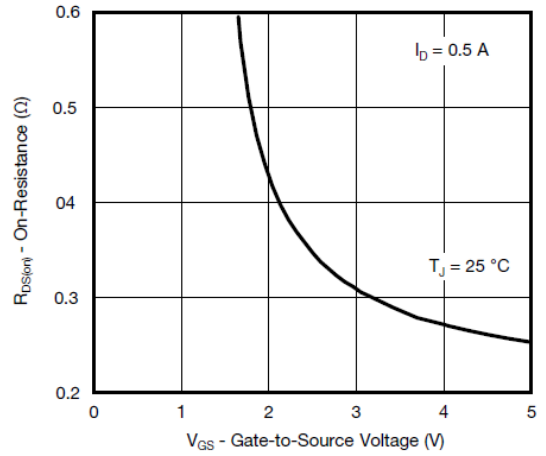
Gate Charge



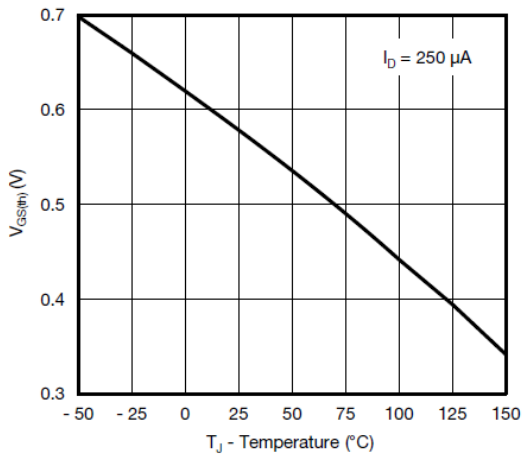
On-Resistance vs. Junction Temperature



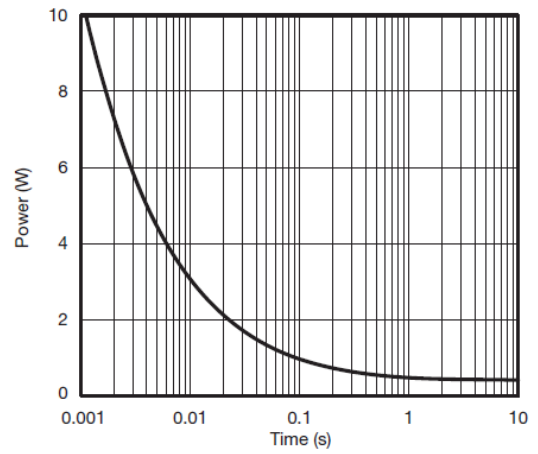
Source-Drain Diode Forward Voltage



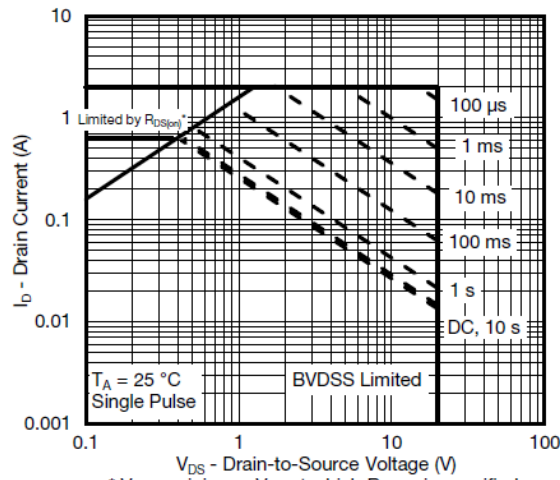
On-Resistance vs. Gate-to-Source Voltage



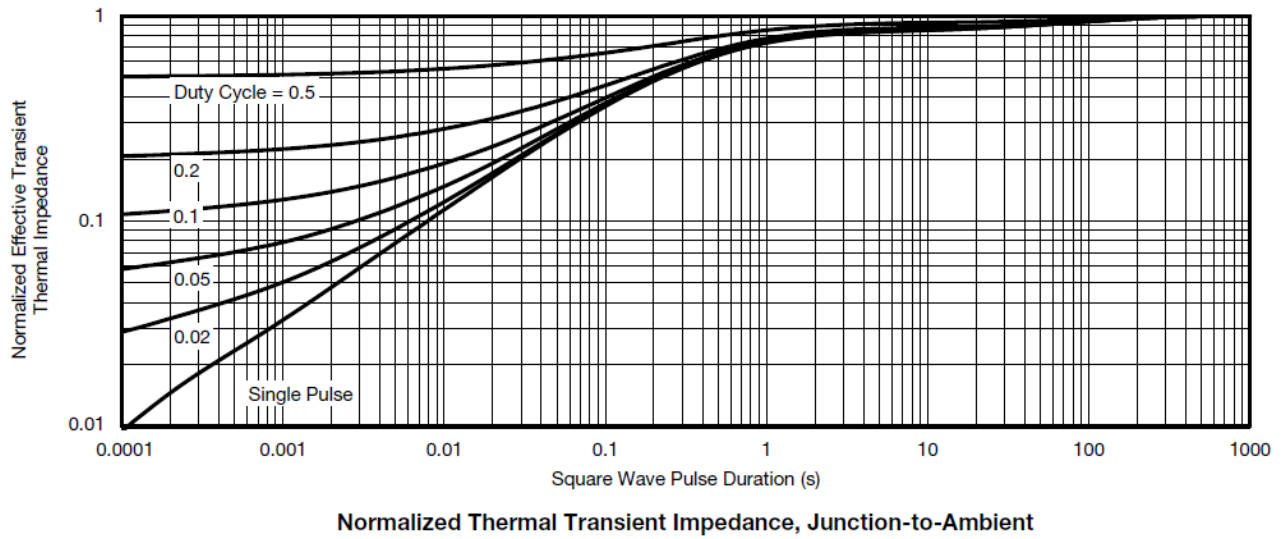
Threshold Voltage



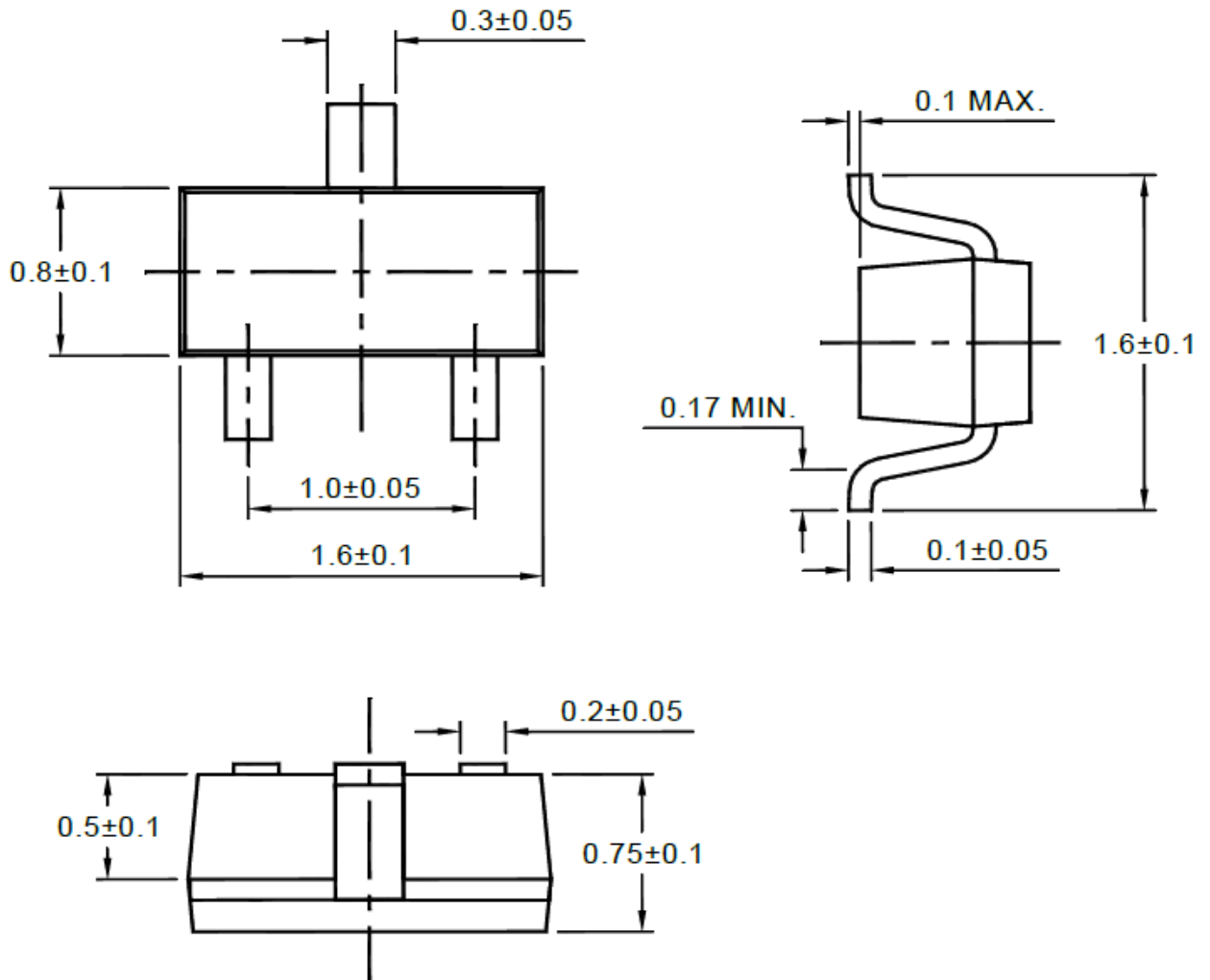
Single Pulse Power, Junction-to-Ambient



Safe Operating Area, Junction-to-Ambient



- Package Information



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