

N-Channel 20V(D-S) MOSFET

Product summary		
V_{DS}	20	V
$R_{DS(ON)}$ (at $V_{GS}=4.5V$) Typ.	250	m Ω
$R_{DS(ON)}$ (at $V_{GS}=2.5V$) Typ.	300	m Ω
I_D ($T_A=25^{\circ}C$)	0.64	A

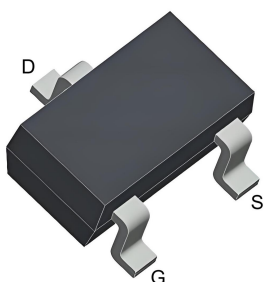
Features

- Operated at Low Logic Level Gate Drive
- Low $R_{DS(on)}$
- ESD protection up to 2 kV

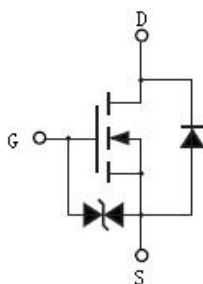
Applications

- Load Switching
- Logic Level Shift

Pin Configuration



SOT-523



Packing Information

Device	Marking	Reel Size	Tape Width	Quantity
ECDH1012E	1012	7"	8mm	3000pcs

Absolute Maximum Ratings (at $T_A=25^{\circ}C$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Units
V_{DS}	Drain-Source Voltage		20	V
V_{GS}	Gate-Source Voltage		± 10	V
I_D	Continuous Drain Current at $V_{GS}=4.5V^A$	$T_A=25^{\circ}C$	0.64	A
		$T_A=70^{\circ}C$	0.5	A
I_{DM}	Pulse Drain Current Tested ^B		3	A
P_D	Power Dissipation ^A	$T_A=25^{\circ}C$	0.28	W
T_J, T_{STG}	Junction and Storage Temperature Range		-55 to +150	$^{\circ}C$

Thermal Characteristics

Symbol	Parameter	Typical	Units
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Electrical Characteristics (at $T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

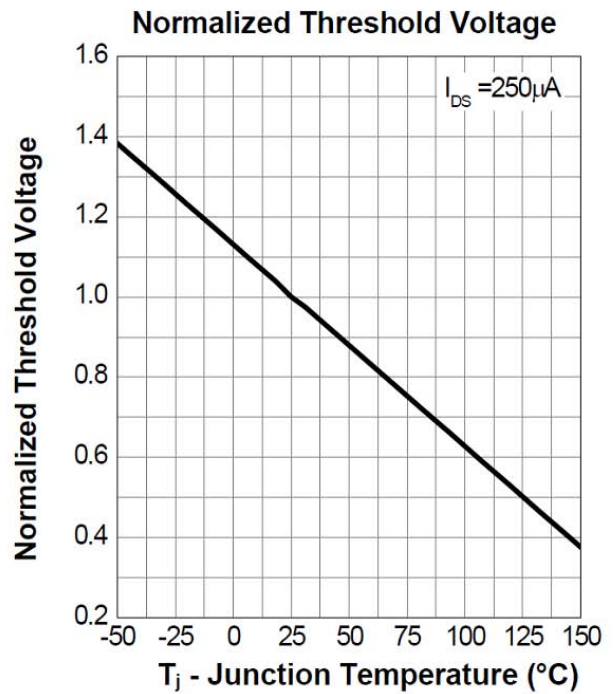
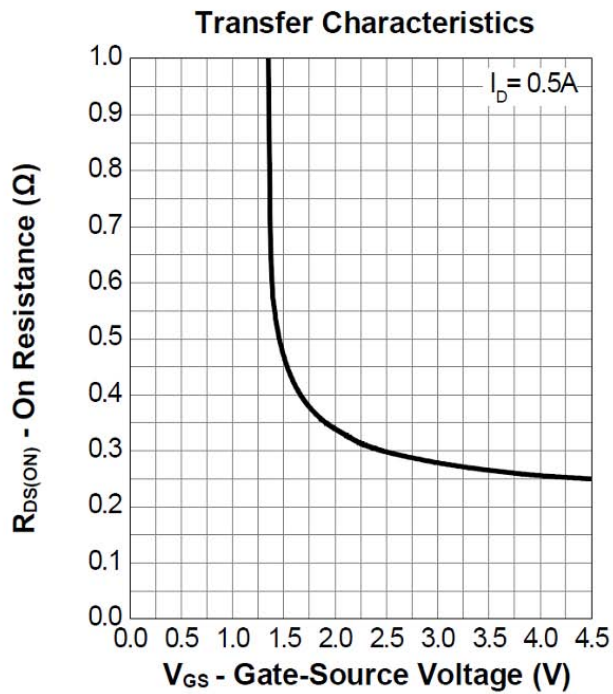
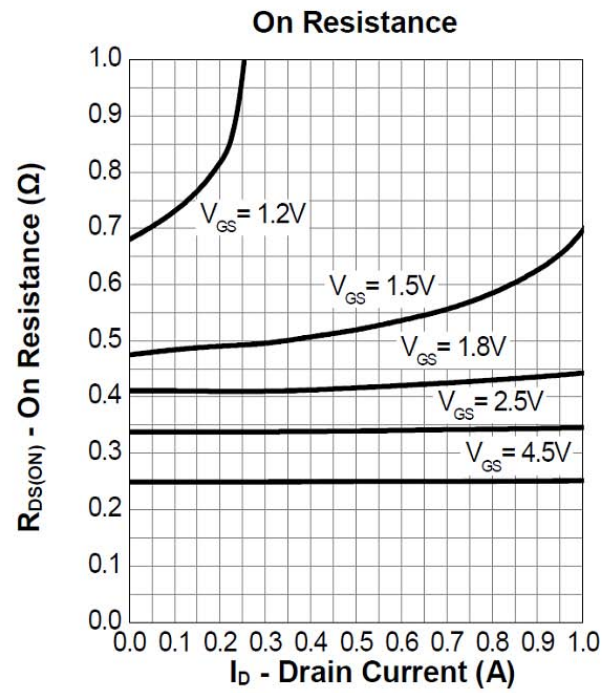
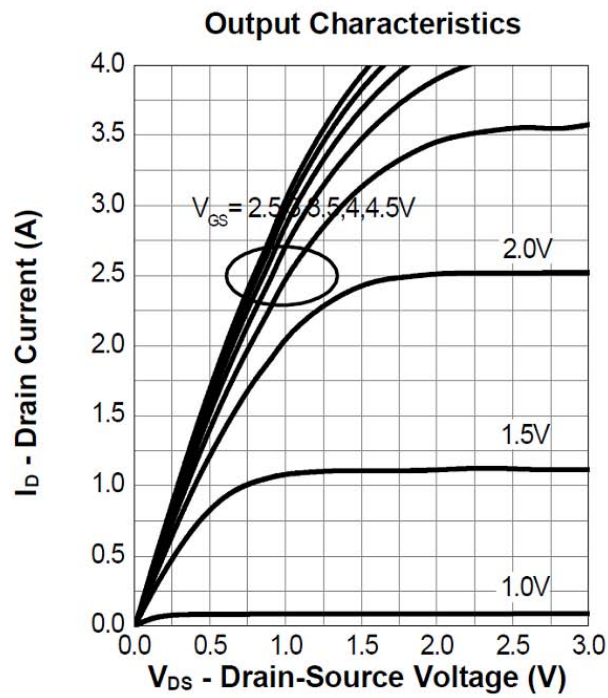
Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=16V, V_{GS}=0V$	--	--	1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 10V$	--	--	± 30	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4	0.7	1.0	V
$R_{DS(on)}$	Drain-Source On-State Resistance ^B	$V_{GS}=4.5V, I_D=0.5A$	--	250	380	m Ω
		$V_{GS}=2.5V, I_D=0.2A$	--	300	440	m Ω
		$V_{GS}=1.8V, I_D=0.1A$	--	370	530	m Ω
V_{SD}	Forward Voltage	$I_{SD}=0.5A, V_{GS}=0V$	--	--	1.2	V
Dynamic Parameters ^C						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=10V$ $f=1MHz$	--	67	--	pF
C_{oss}	Output Capacitance		--	18	--	pF
C_{rss}	Reverse Transfer Capacitance		--	6	--	pF
Q_g	Total Gate Charge	$V_{DS}=10V, I_D=0.5A$ $V_{GS}=4.5V$	--	1.4	--	nC
Q_{gs}	Gate-Source Charge		--	0.21	--	nC
Q_{gd}	Gate-Drain Charge		--	0.21	--	nC
$t_{D(on)}$	Turn-on Delay Time	$V_{DD}=10V$ $I_D=0.15A,$ $R_{GEN}=10\Omega,$ $V_{GS}=4.5V$	--	2.8	--	nS
t_r	Turn-on Rise Time		--	20	--	nS
$t_{D(off)}$	Turn-off Delay Time		--	23	--	nS
t_f	Turn-off Fall Time		--	24	--	nS

A. The data tested by surface mounted on a 1 inch x 1 inch FR-4 board with 20Z copper.

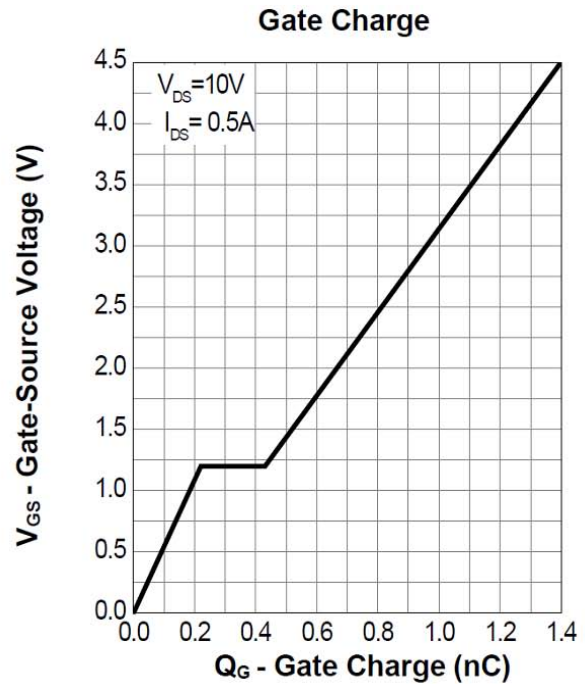
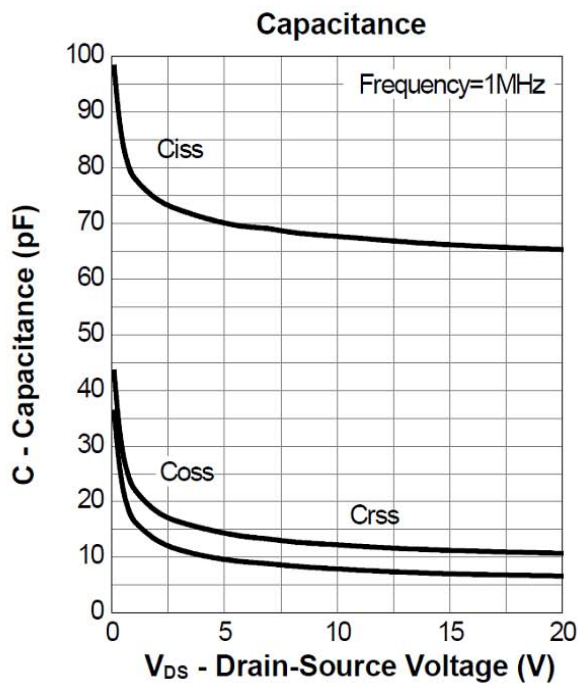
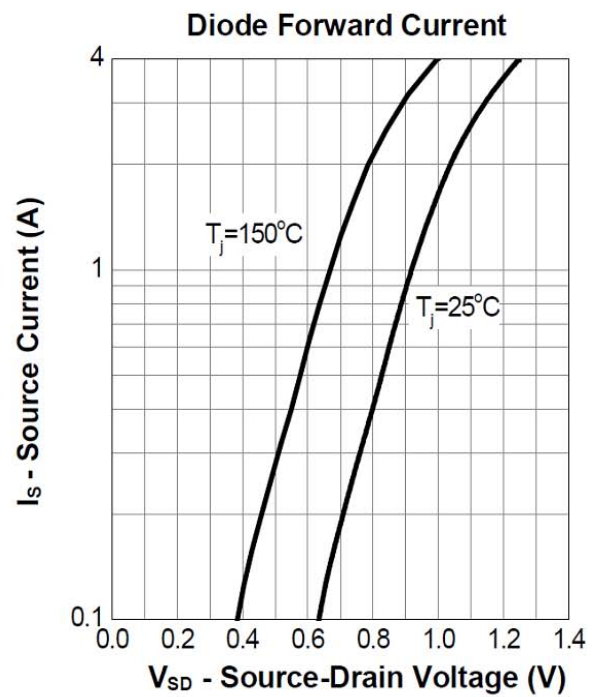
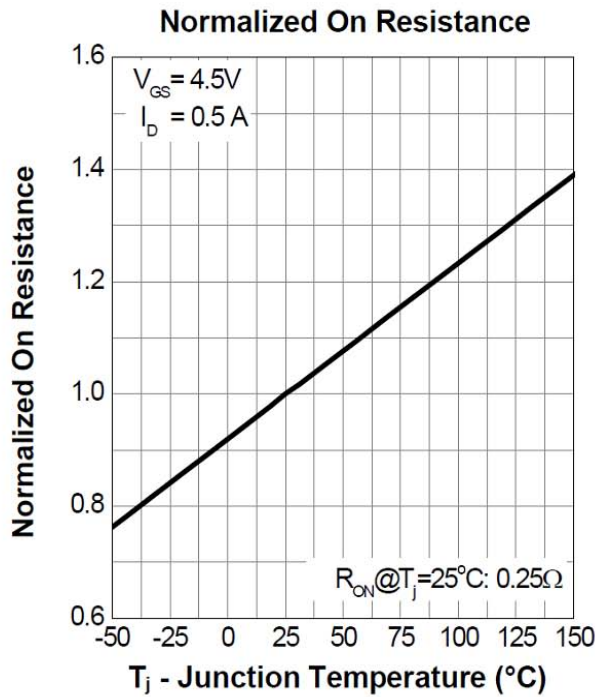
B. Pulse Test: Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

C. Guaranteed by design, not subject to production testing.

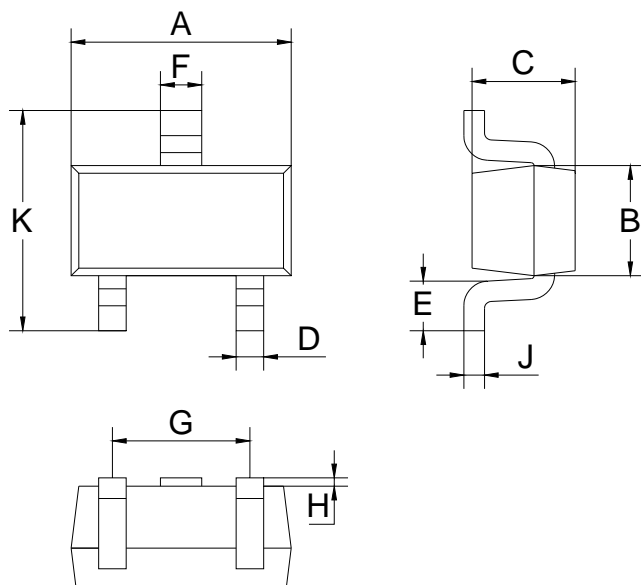
Typical Characteristics



Typical Characteristics



SOT-523 Package Information



SOT-523(mm)		
Dim	Min	Max
A	1.50	1.70
B	0.75	0.85
C	0.60	0.80
D	0.15	0.30
E	0.30	0.40
F	0.25	0.40
G	0.90	1.10
H	0.02	0.10
J	0.08	0.18
K	1.45	1.75

Recommended Pad outline

