

N-Channel 30V(D-S) MOSFET

Product summary		
V_{DS}	30	V
$R_{DS(ON)}$ (at $V_{GS}=4.5V$) Typ.	500	m Ω
$R_{DS(ON)}$ (at $V_{GS}=2.5V$) Typ.	700	m Ω
I_D ($T_A=25^{\circ}C$)	0.4	A

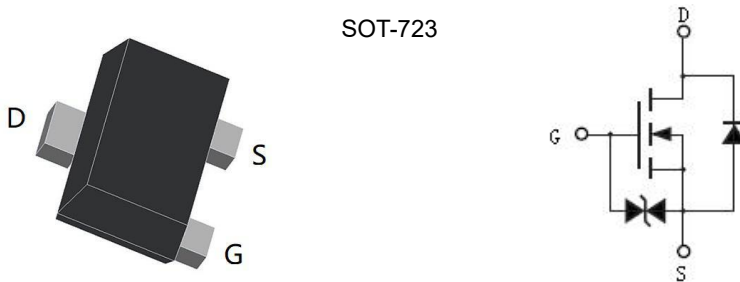
Features

- Operated at Low Logic Level Gate Drive
- ESD protection up to 2 kV
- Advanced Trench Technology

Applications

- Load Switching
- Logic Level Shift

Pin Configuration



Packing Information

Device	Package	Reel Size	Tape Width	Quantity
EC DK3541	SOT-723	7"	8mm	10000pcs

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current at $V_{GS}=4.5V$ ^A	$T_A=25^{\circ}C$	0.4
		$T_A=70^{\circ}C$	0.32
I_{DM}	Pulse Drain Current Tested ^B	2.2	A
P_D	Power Dissipation ^A	$T_A=25^{\circ}C$	0.15
T_J, T_{STG}	Junction and Storage Temperature Range	-55 to +150	$^{\circ}C$

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to ambient ^A	833	$^{\circ}C/W$

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	$V_{GS}=0V, I_D=250\mu A$	30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$	--	--	1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	--	--	± 10	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.9	1.2	1.7	V
$R_{DS(on)}$	Drain-Source On-State Resistance ^B	$V_{GS}=10V, I_D=0.4A$	--	500	700	m Ω
		$V_{GS}=4.5V, I_D=0.2A$	--	700	900	m Ω
V_{SD}	Forward Voltage	$I_{SD}=0.5A, V_{GS}=0V$	--	--	1.2	V
Dynamic Parameters ^C						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=15V$ $f=1\text{MHz}$	--	18	--	pF
C_{oss}	Output Capacitance		--	7	--	pF
C_{rss}	Reverse Transfer Capacitance		--	3	--	pF
Q_g	Total Gate Charge	$V_{DS}=10V, I_D=0.3A$ $V_{GS}=0 \text{ to } 10V$	--	1.7	--	nC
Q_{gs}	Gate-Source Charge		--	0.5	--	nC
Q_{gd}	Gate-Drain Charge		--	0.7	--	nC
$t_{D(on)}$	Turn-on Delay Time	$V_{DD}=10V$ $I_D=0.2A,$ $R_{GEN}=10\Omega,$ $V_{GS}=10V$	--	1.7	--	nS
t_r	Turn-on Rise Time		--	10	--	nS
$t_{D(off)}$	Turn-off Delay Time		--	10	--	nS
t_f	Turn-off Fall Time		--	22	--	nS

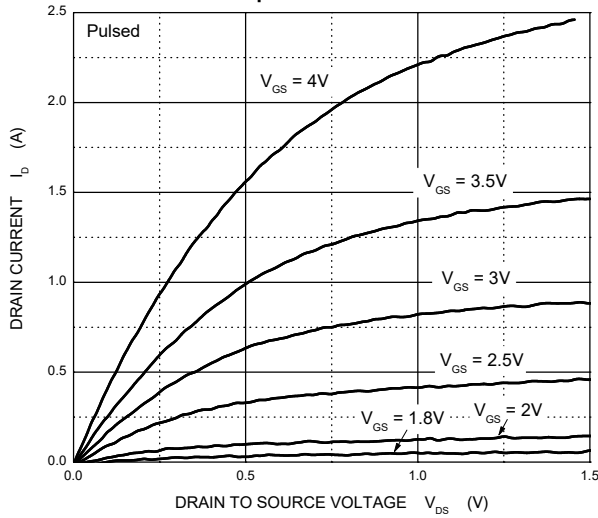
A. The data tested by surface mounted on a 1 inch x 1 inch FR-4 board with 2OZ copper.

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

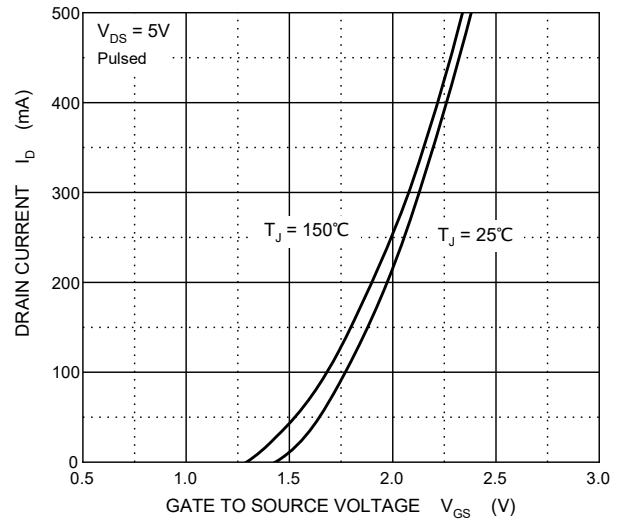
C. Guaranteed by design, not subject to production testing.

Typical Characteristics

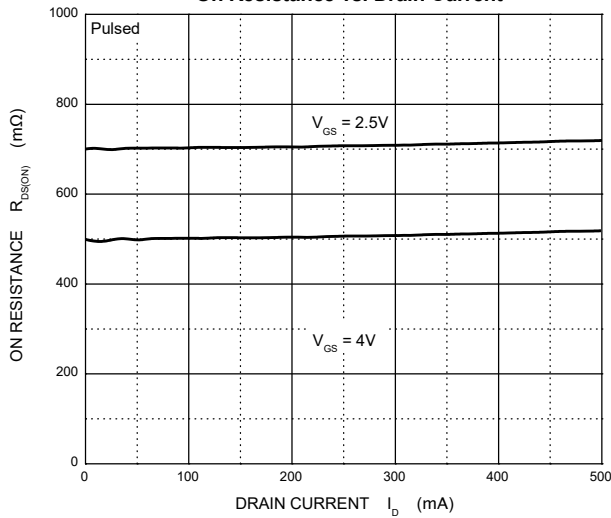
Output Characteristics



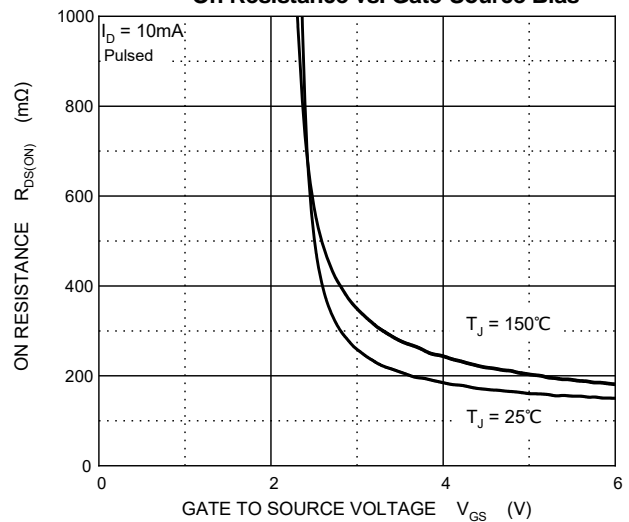
Transfer Characteristics



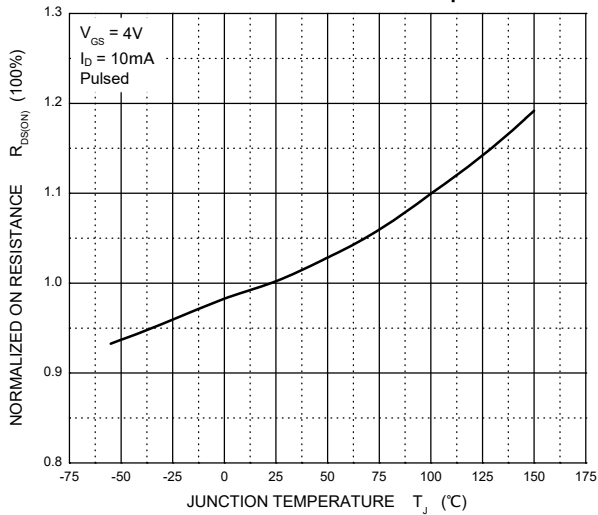
On Resistance vs. Drain Current



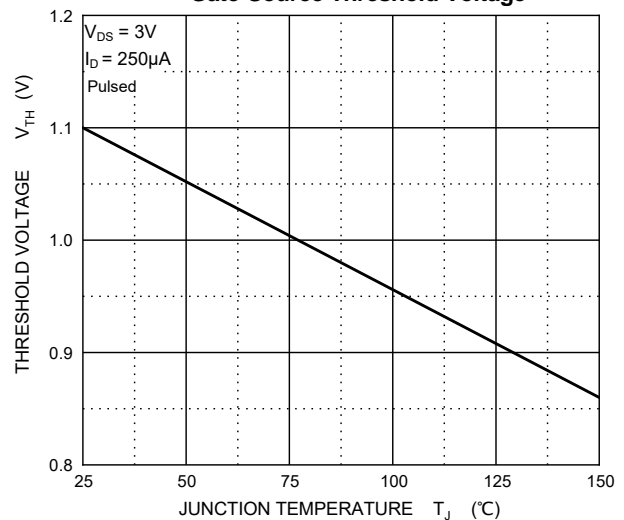
On Resistance vs. Gate-Source Bias



On Resistance vs. Junction Temperature

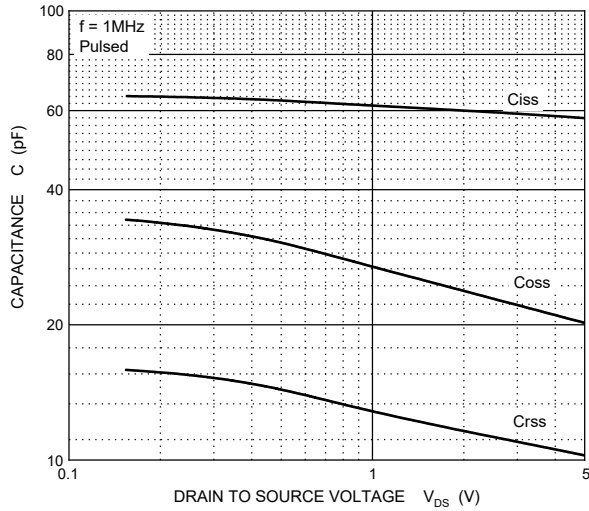


Gate-Source Threshold Voltage

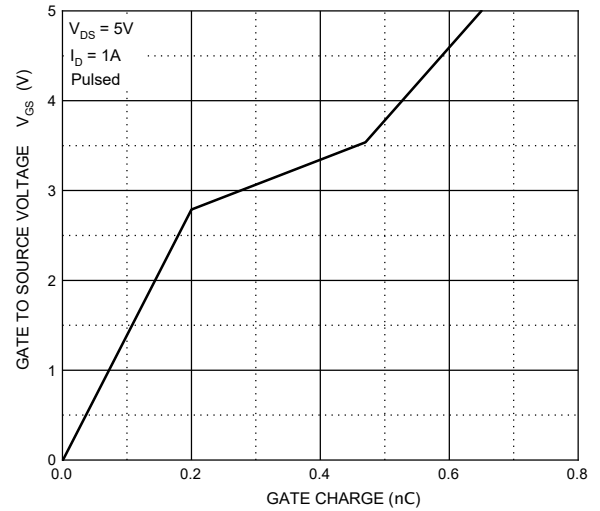


Typical Characteristics

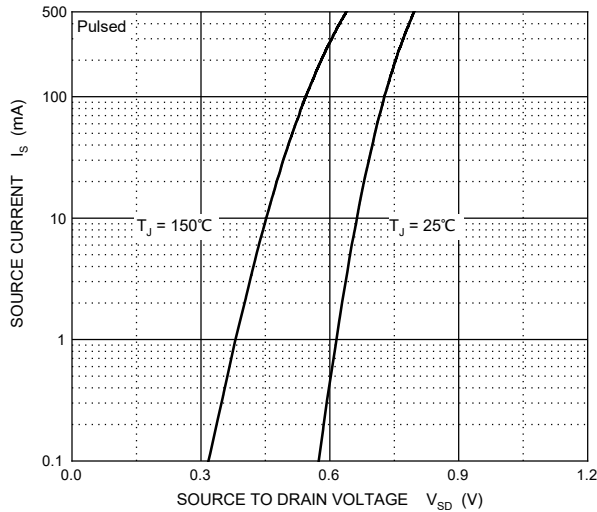
Typical Capacitances



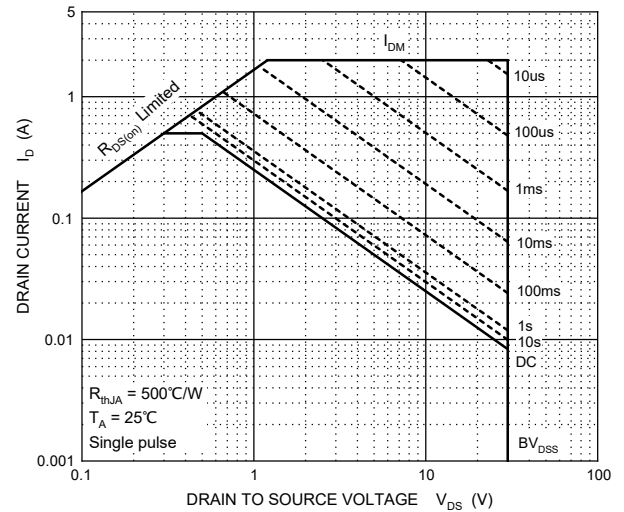
Gate Charge



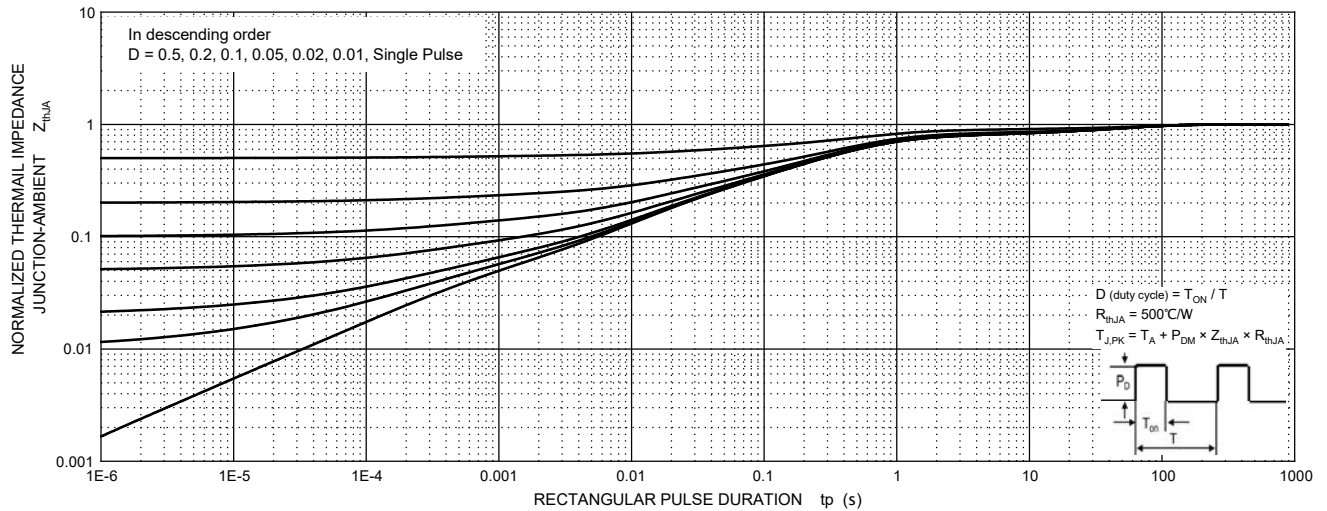
Source-Drain Diode Forward Characteristics



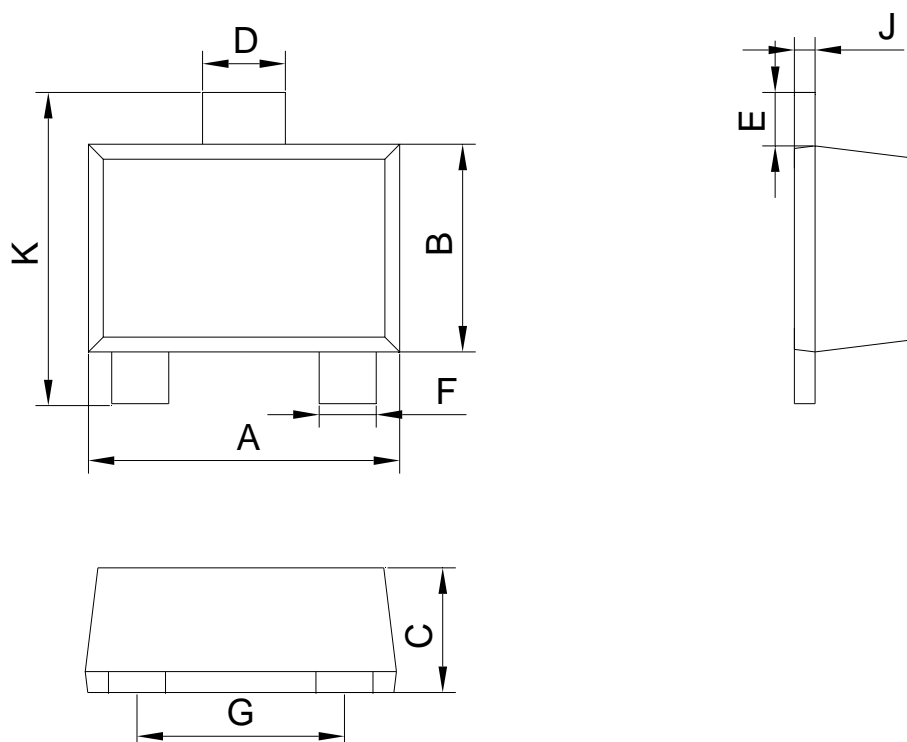
Maximum Safe Operating Area



Transient Thermal Impedance, Junction-Ambient



SOT-723 Package Information



SOT-723		
Dim	Min	Max
A	1.10	1.30
B	0.70	0.90
C	0.40	0.54
D	0.22	0.42
E	0.10	0.30
F	0.12	0.32
G	0.70	0.90
J	0.08	0.15
K	1.10	1.30