

P-Channel 20V (D-S) MOSFET

V_{DS}	$R_{DS(on)MAX}$	I_D
-20V	110mΩ@-4.5V	-2.3A
	150mΩ@-2.5V	

Features

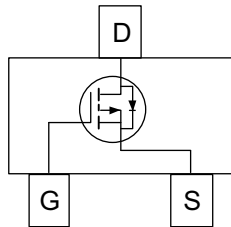
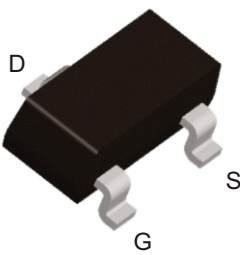
- Small package SOT23-3L
- Low Gate Charge
- RoHS Compliant

Applications

- Load Switch
- Power management

Pin Configuration

SOT23-3L



Packing Information

Device	Marking	Reel Size	Tape Width	Quantity
ECG2305	13D .XXX	7"	8mm	3000pcs

Absolute Maximum Ratings (T_J=25 °C Unless Otherwise Noted)

Symbol	Parameter	Value	Unit
P-MOSFET			
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D	Continuous Drain Current	-2.3	A
I_{DM}	Pulse Drain Current	-9	A
P_D	Maximum Power Dissipation	1.2	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	104	°C/W
T_j	Junction Temperature	150	°C
T_{stg}	Storage Temperature	-55~+150	°C
T_L	Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	260	°C
Thermal Resistance Ratings			
R_{thJA}	Maximum Junction-to-Ambient ^a	100	°C/W
	Maximum Junction-to-Ambient ^b	160	°C/W

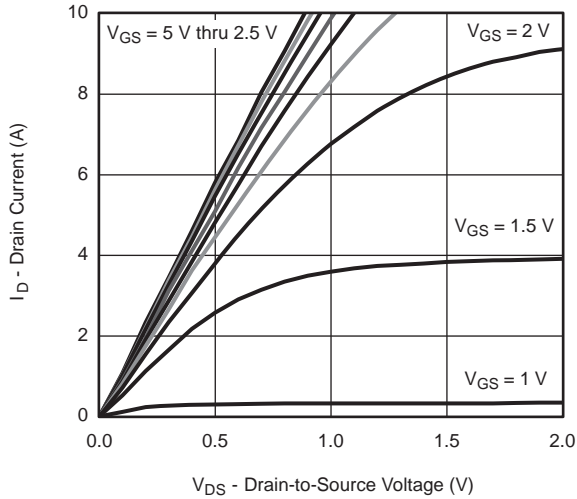
Notes

- Surface Mounted on FR4 Board, t = 5 sec.
- Surface Mounted on FR4 Board.

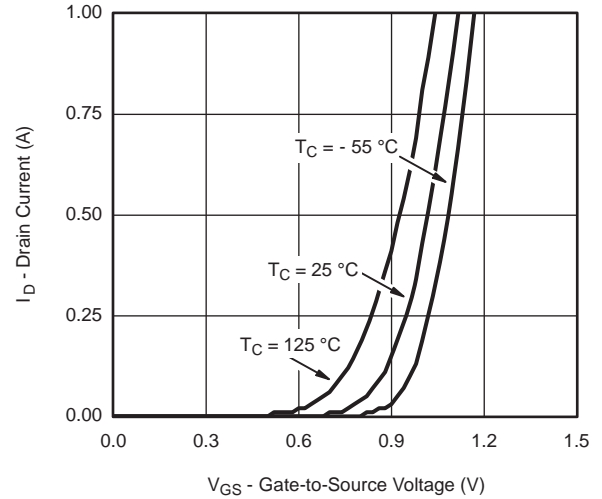
Electrical Characteristics (T_J = 25°C Unless Otherwise Specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-20			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -20V, V _{GS} = 0V			-1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±8V, V _{DS} = 0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-0.4	-0.65	-1	V
Drain-source on-resistance(note1)	R _{DS(on)}	V _{GS} = -4.5V, I _D = -2.8A		90	110	mΩ
		V _{GS} = -2.5V, I _D = -2.0A		120	150	mΩ
Forward transconductance(note1)	g _{FS}	V _{DS} = -5V, I _D = -2.9A		7		S
Diode forward voltage(note1)	V _{SD}	I _S = -0.7A, V _{GS} = 0V		-0.8	-1.2	V
DYNAMIC						
Input capacitance	C _{ISS}	V _{DS} = -10V, V _{GS} = 0V, f = 1MHz		405		pF
Output capacitance	C _{OSS}			75		pF
Reverse transfer capacitance	C _{RSS}			55		pF
SWITCHING PARAMETERS						
Turn-on delay time	t _{d(on)}	V _{GS} = -4.5V, V _{DD} = -10V, R _L = 10Ω, R _G = 1Ω, I _D = -1A		11		ns
Turn-on rise time	t _r			35		ns
Turn-off delay time	t _{d(off)}			30		ns
Turn-off fall time	t _f			10		ns
Total Gate Charge	Q _g	V _{DS} = -10V, V _{GS} = -4.5V, I _D = -3A		5.5		nC
Gate-Source Charge	Q _{gs}			0.7		nC
Gate-Drain Charge	Q _{gd}			1.3		nC

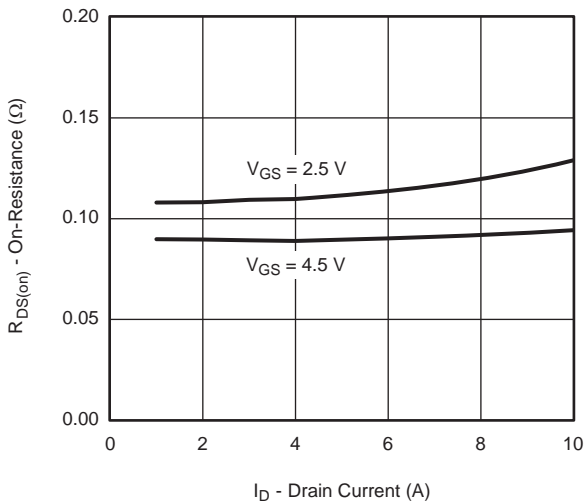
TYPICAL CHARACTERISTICS (25°C, unless otherwise noted)



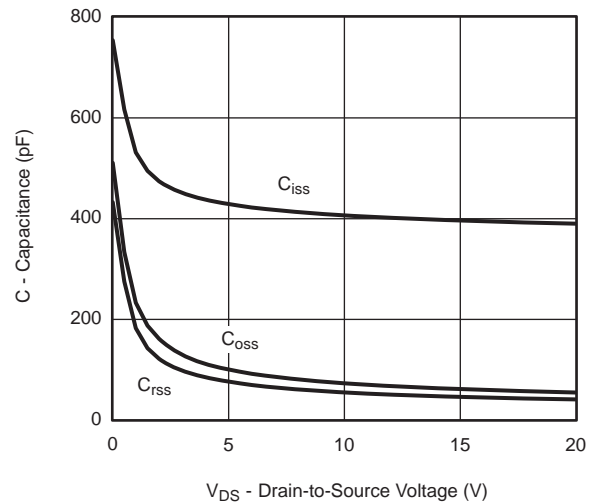
Output Characteristics



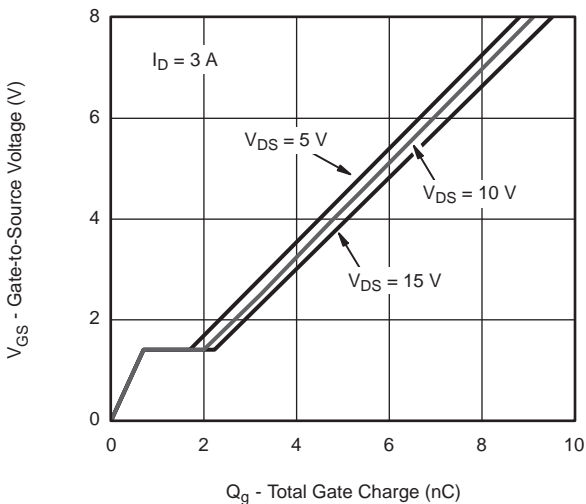
Transfer Characteristics



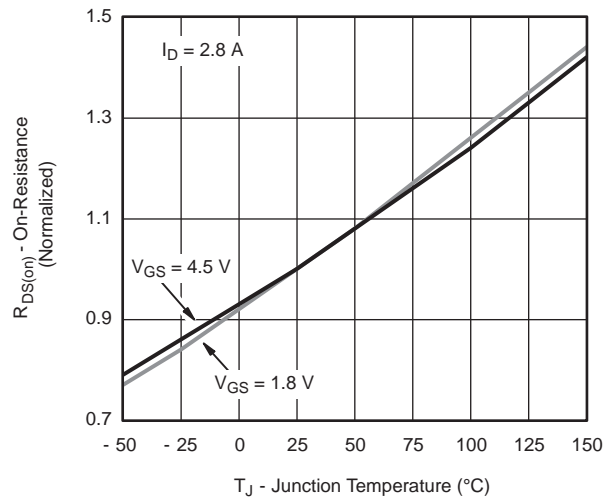
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

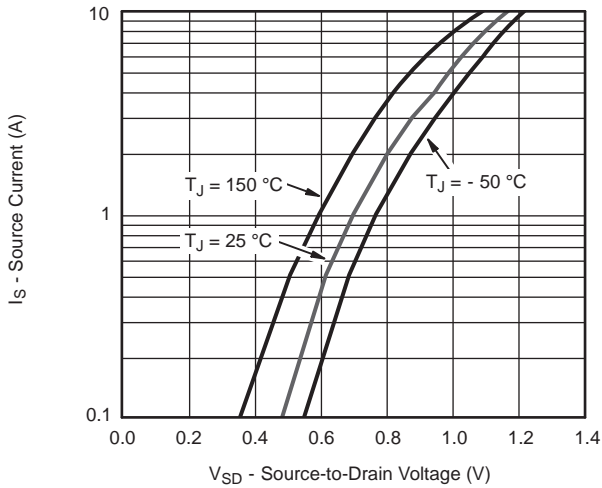


Gate Charge

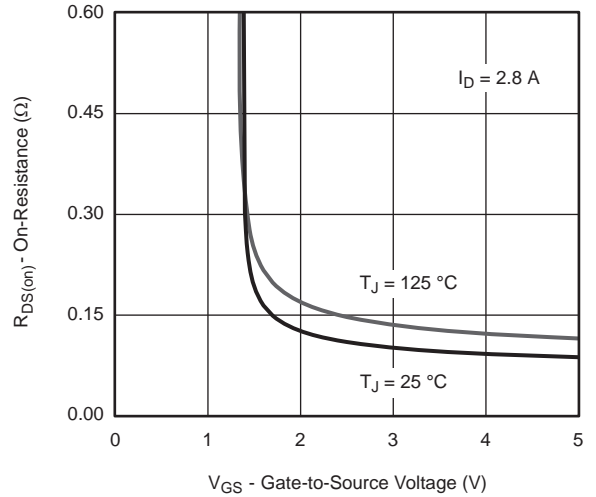


On-Resistance vs. Junction Temperature

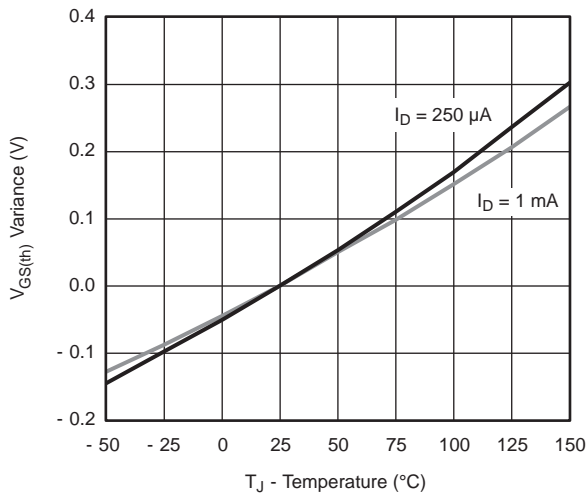
TYPICAL CHARACTERISTICS (25°C, unless otherwise noted)



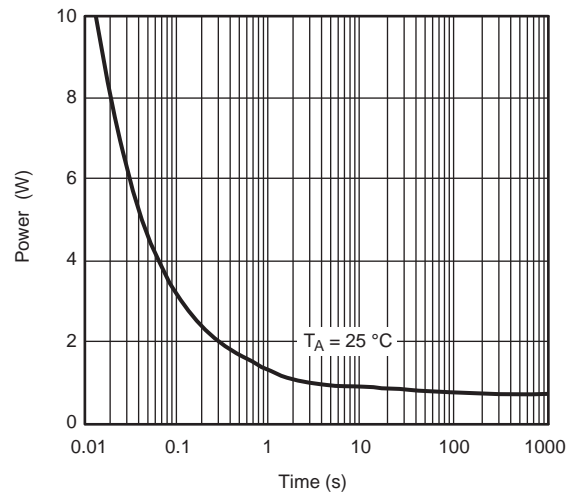
Source-Drain Diode Forward Voltage



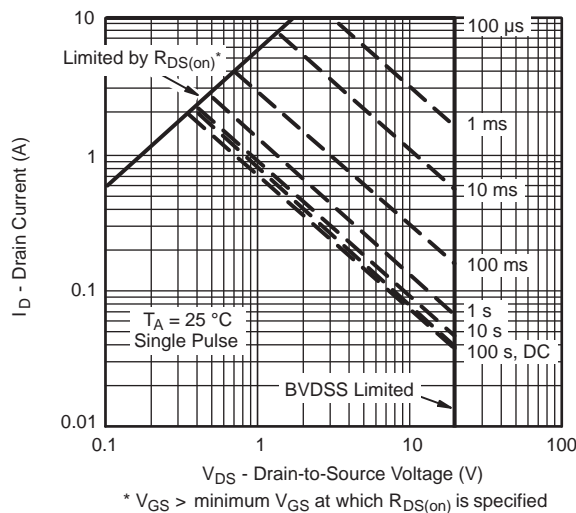
On-Resistance vs. Gate-to-Source Voltage



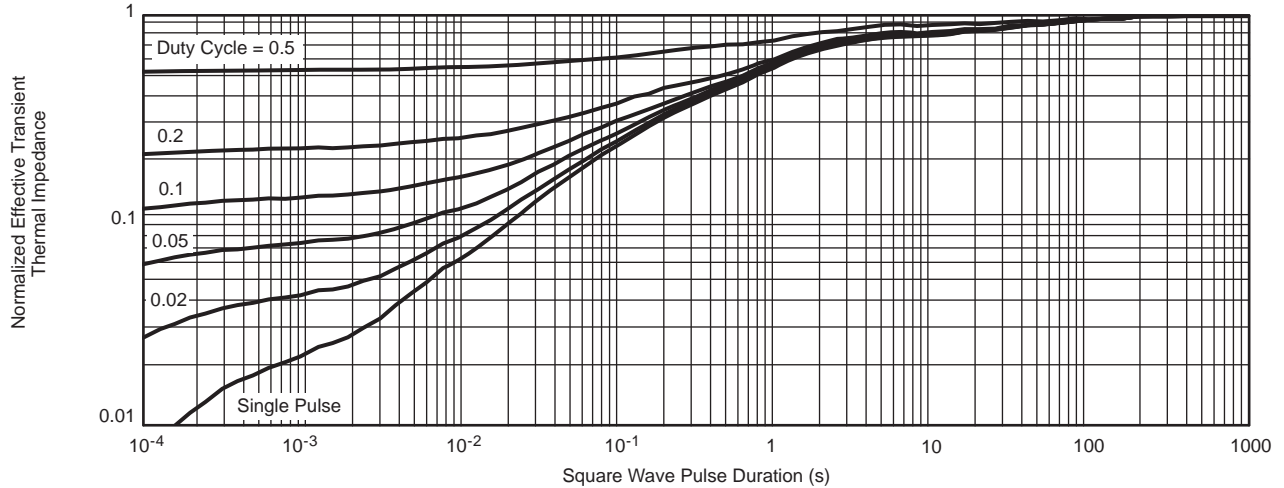
Threshold Voltage



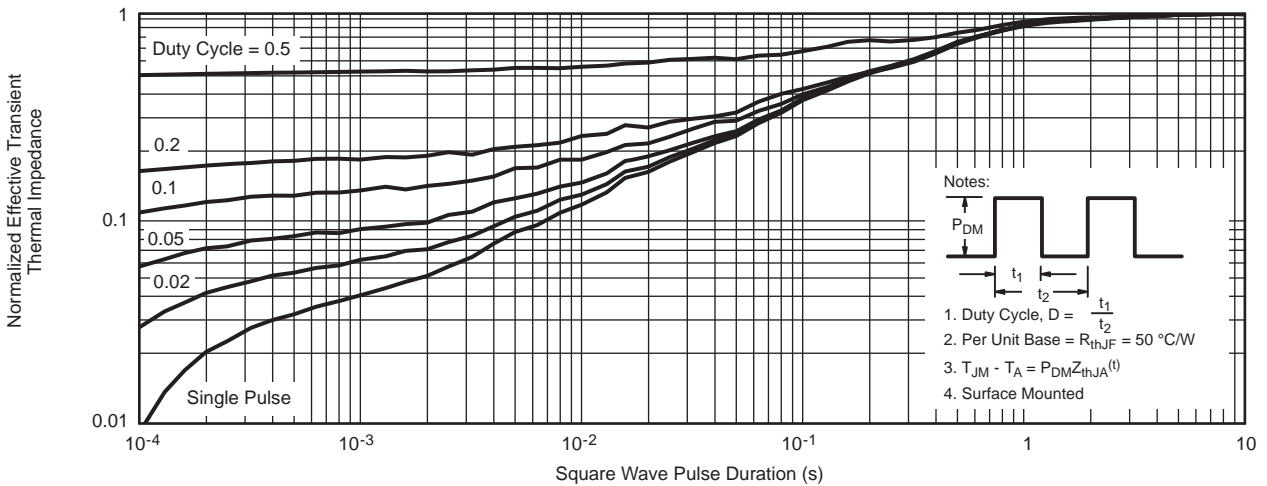
Single Pulse Power



TYPICAL CHARACTERISTICS (25°C, unless otherwise noted)

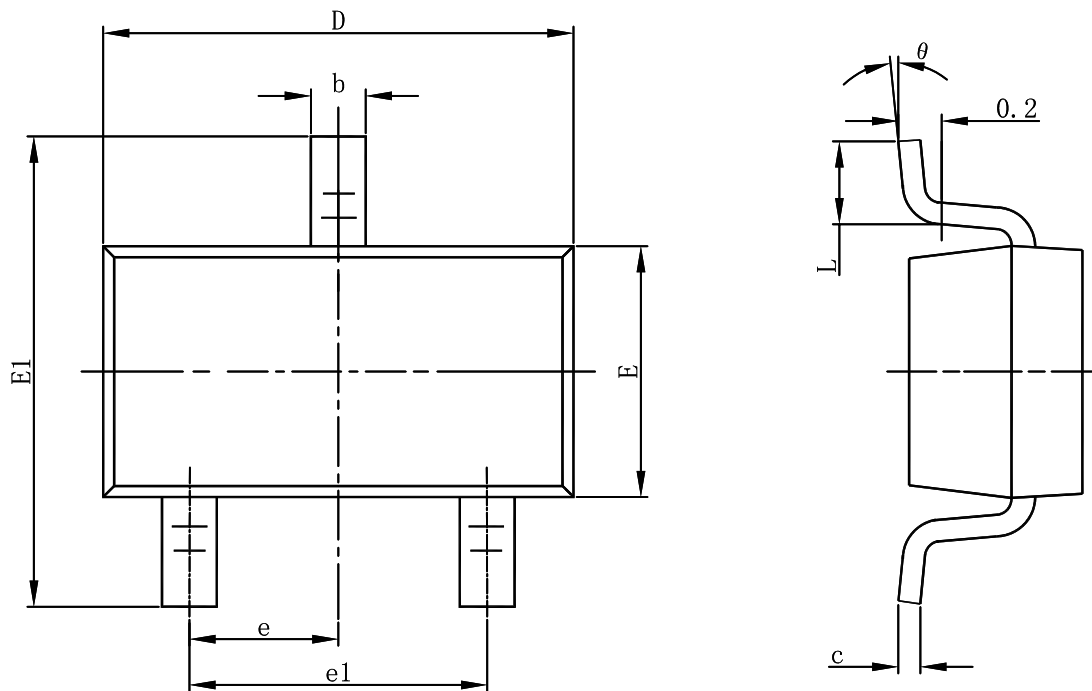


Normalized Thermal Transient Impedance, Junction-to-Ambient

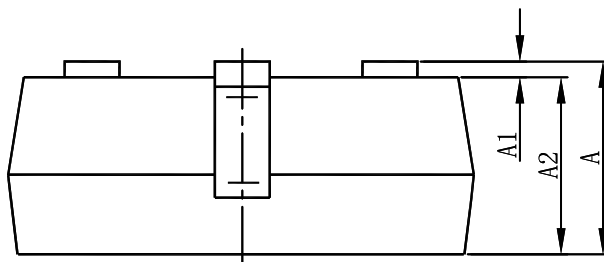


Normalized Thermal Transient Impedance, Junction-to-Foot

SOT23-3L Package Information



Top View



Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°