

P-Channel 20V (D-S) MOSFET

V_{DS}	$R_{DS(on)MAX}$	I_D
-20V	34 mΩ@-4.5V	-6A
	45 mΩ@-2.5V	-6A
	67 mΩ@-1.8V	-5.2A

Features

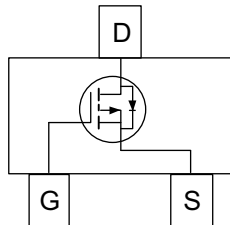
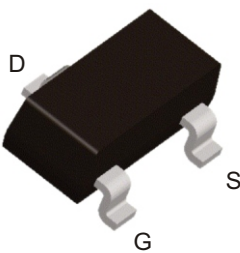
- Small package SOT23-3L
- Low Gate Charge
- RoHS Compliant

Applications

- Load Switch
- PA Switch
- DC/DC Converters

Pin Configuration

SOT23-3L



Packing Information

Device	Marking	Reel Size	Tape Width	Quantity
EC2399	13D .XXX	7"	8mm	3000pcs

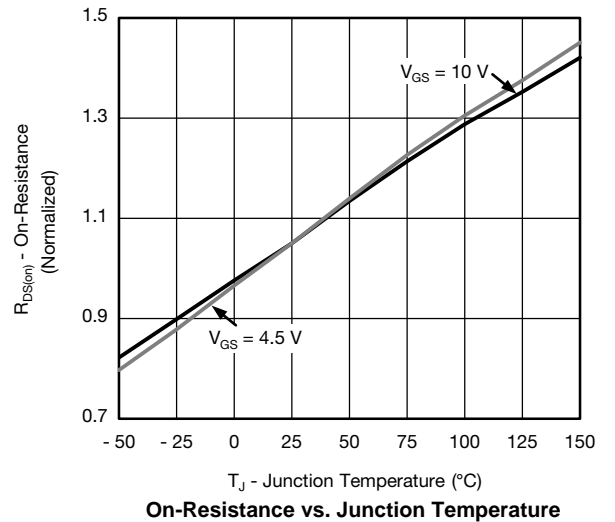
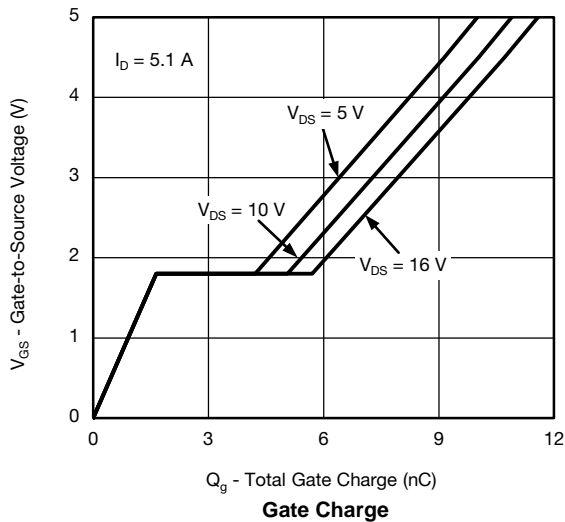
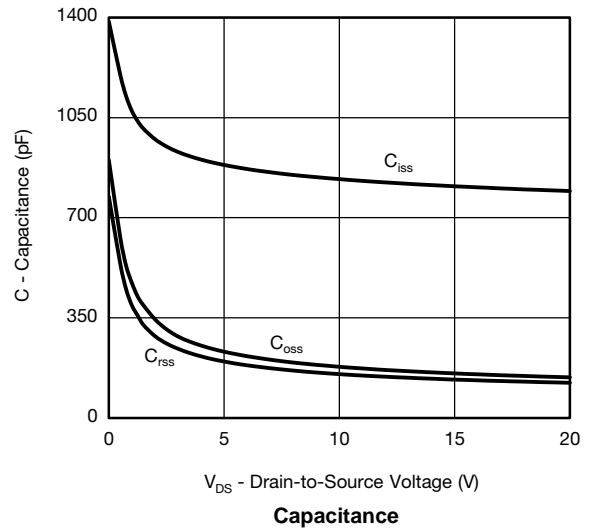
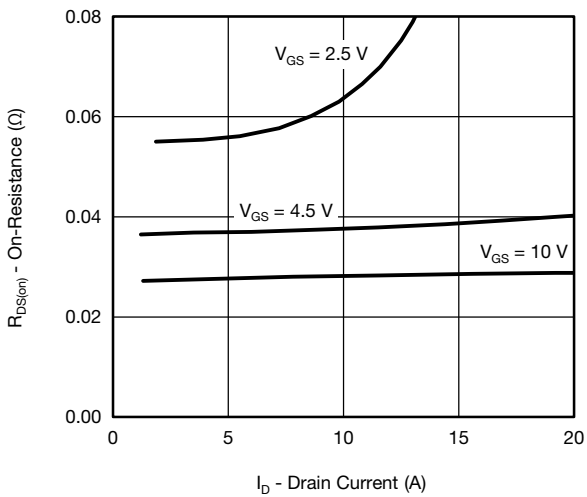
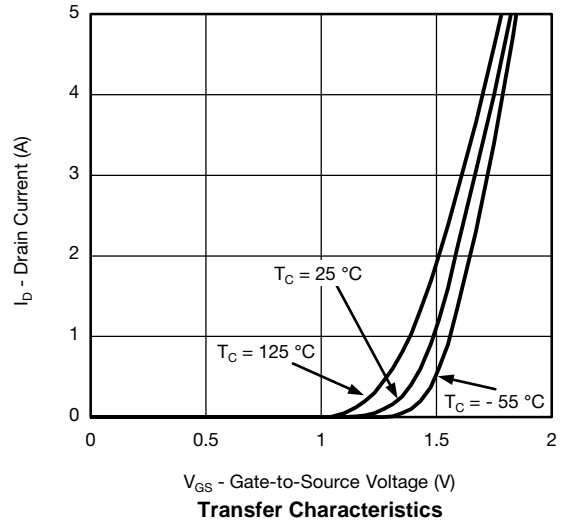
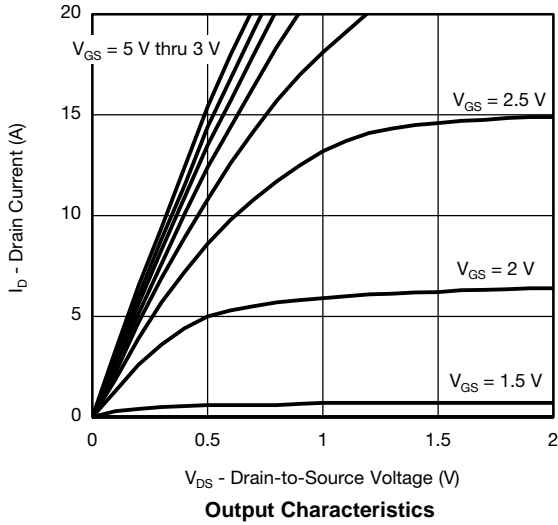
Absolute Maximum Ratings (T_J=25 °C Unless Otherwise Noted)

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	-6	A
I_{DM}	Pulse Drain Current	-20	A
P_D	Maximum Power Dissipation	2.5	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	250	°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 ^b	75	°C/W
	Maximum Junction-to-Ambient ^c	100	°C/W

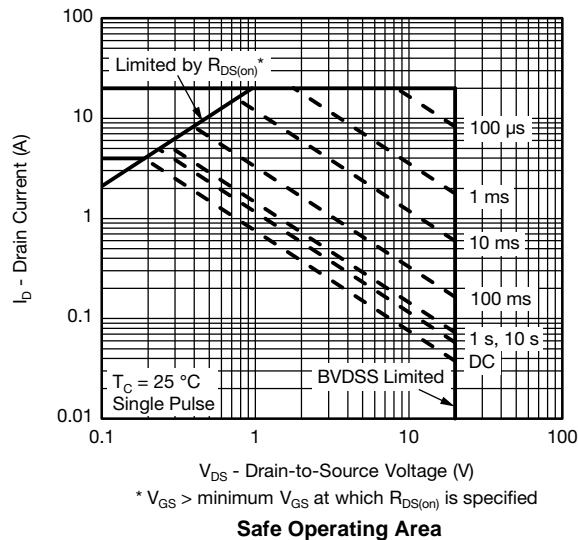
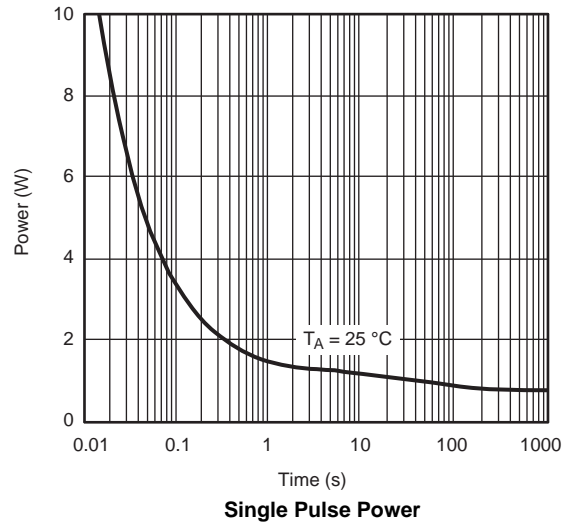
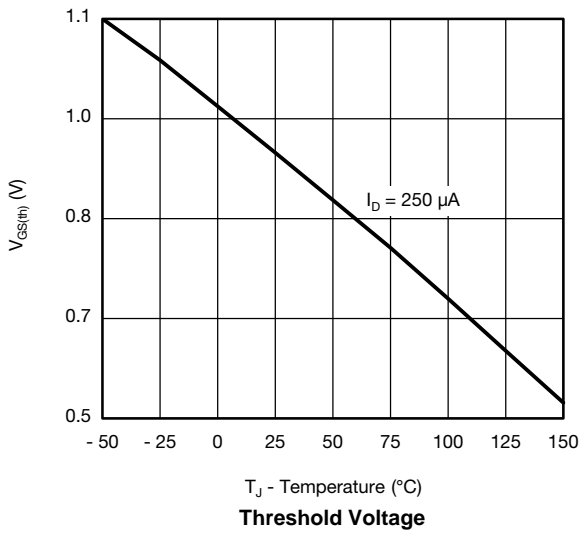
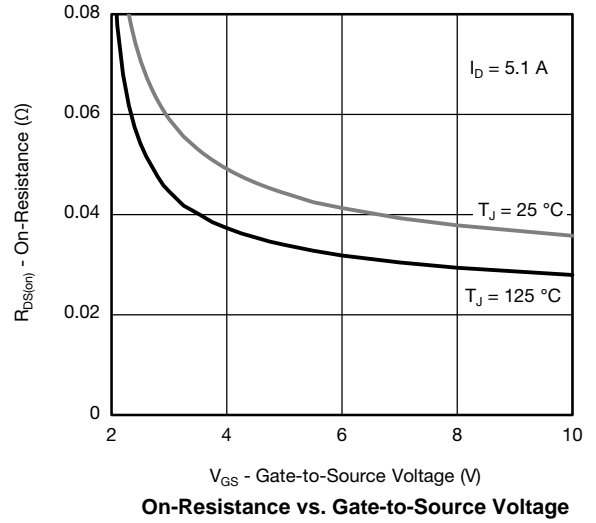
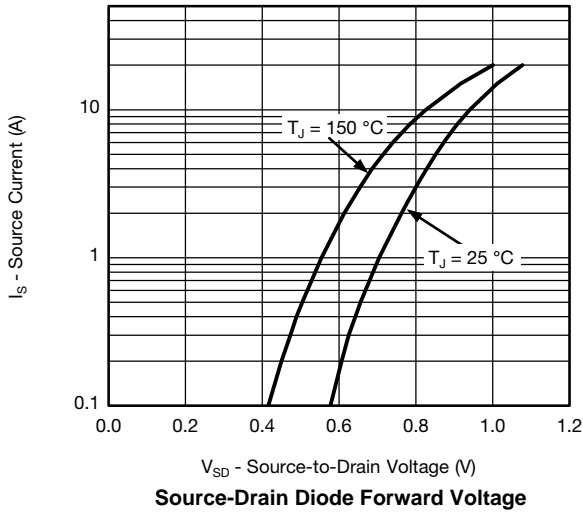
Electrical Characteristics (T_J = 25°C Unless Otherwise Specified)

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} = ±12V, V _{DS} = 0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-0.6		-1.5	V
Drain-source on-resistance(note1)	R _{DS(on)}	V _{GS} = -10V, I _D = -5.1A		28	34	mΩ
		V _{GS} = -4.5V, I _D = -4.5A		37	45	mΩ
		V _{GS} = -2.5V, I _D = -3.7A		55	67	mΩ
Forward transconductance(note1)	g _{FS}	V _{DS} = -10V, I _D = -2.7A		15		S
Diode forward voltage(note1)	V _{SD}	I _S = -4.1A, V _{GS} = 0V		-0.8	-1.2	V
DYNAMIC						
Input capacitance	C _{ISS}	V _{DS} = -10V, V _{GS} = 0V, f = 1MHz			830	pF
Output capacitance	C _{OSS}				180	pF
Reverse transfer capacitance	C _{RSS}				155	pF
SWITCHING PARAMETERS (note 2)						
Turn-on delay time	t _{d(on)}	V _{GS} = -4.5V, V _{DD} = -10V, R _L = 2.4 Ω, R _G = 6Ω, I _D = -4.1A		22	33	ns
Turn-on rise time	t _r			20	30	ns
Turn-off delay time	t _{d(off)}			28	42	ns
Turn-off fall time	t _f			9	18	ns
Total Gate Charge	Q _g	V _{DS} = -10V, V _{GS} = -4.5V, I _D = -5.1A		10	20	nC
		V _{DS} = -10V, V _{GS} = -2.5V, I _D = -5.1A		6.4	9.6	nC
Gate-Source Charge	Q _{gs}	V _{DS} = -10V, V _{GS} = -2.5V, I _D = -5.1A		1.7		nC
Gate-Drain Charge	Q _{gd}			3.4		nC

MOSFET TYPICAL CHARACTERISTICS (25°C, unless otherwise noted)

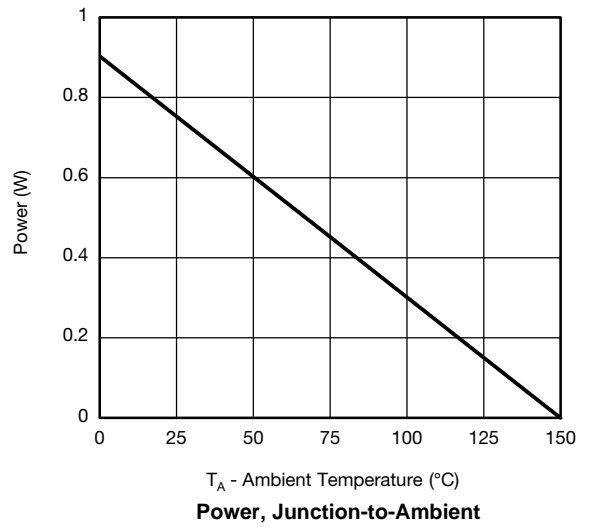
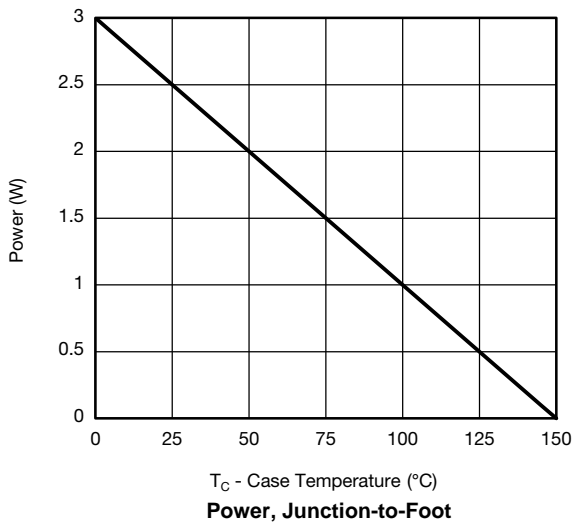
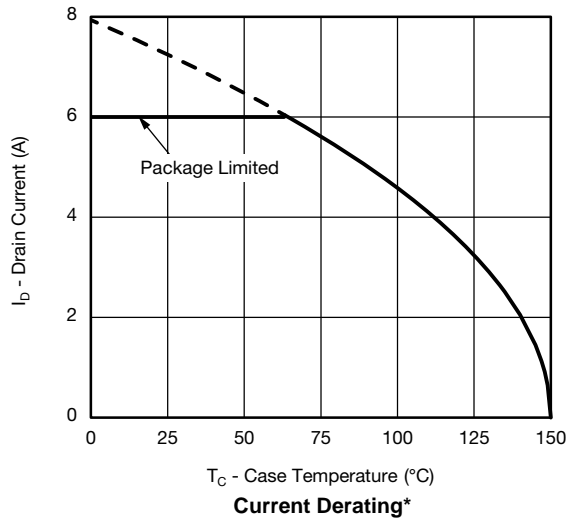


MOSFET TYPICAL CHARACTERISTICS (25°C, unless otherwise noted)



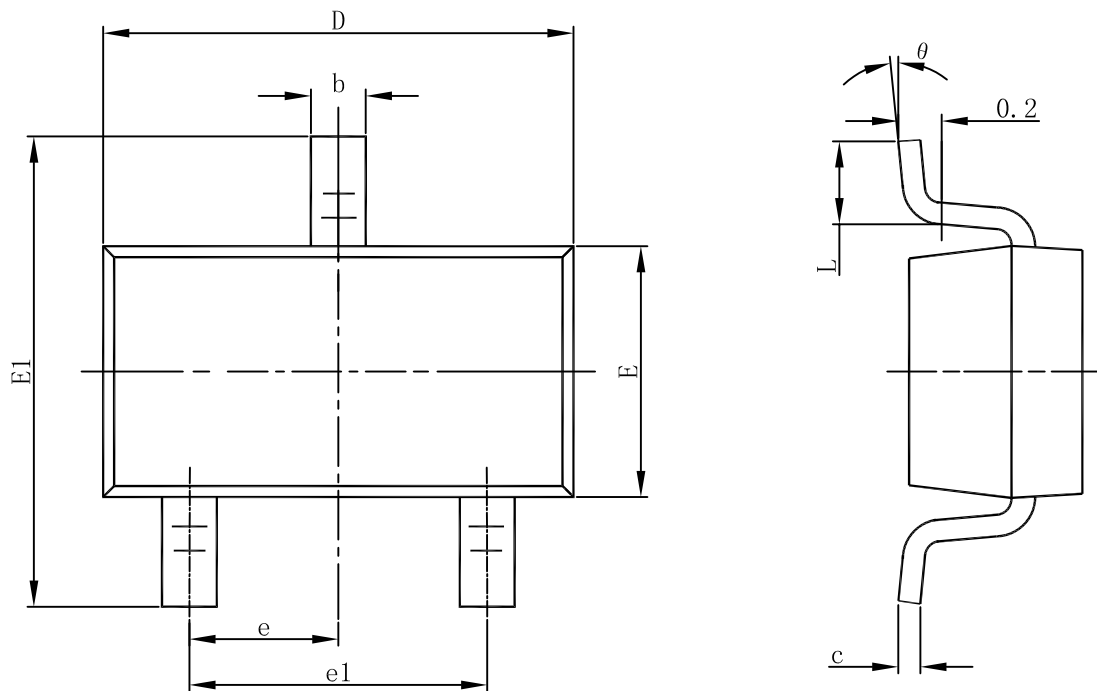
* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified

SCHOTTKY TYPICAL CHARACTERISTICS (25°C, unless otherwise noted)

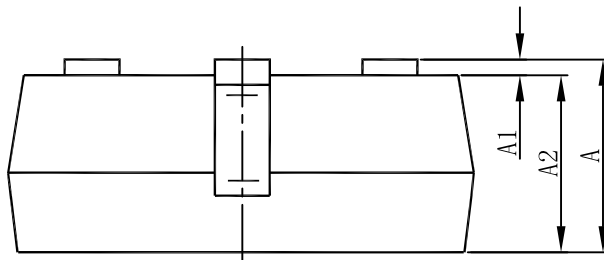


* The power dissipation P_D is based on $T_{J(max)} = 150$ °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.

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°