

## P-Channel 15V(D-S) MOSFET

Product summary		
$V_{DS}$	-15	V
$R_{DS(ON)}$ (at $V_{GS}=4.5V$ ) Typ.	19	m $\Omega$
$R_{DS(ON)}$ (at $V_{GS}=2.5V$ ) Typ.	23	m $\Omega$
$I_D$ ( $T_C=25^\circ C$ )	-6.2	A

### Features

- Fast switching speed
- Low gate charge
- RoHS and Halogen-Free compliant

### Applications

- Load switch
- Power management

### Pin Configuration



### Packing Information

Device	Package	Reel Size	Quantity(Min. Package)
EC2105	SOT-23	7"	3000pcs

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

Symbol	Parameter	Rating	Units	
$V_{DS}$	Drain-Source Voltage	-15	V	
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V	
$I_D$	Continuous Drain Current at $V_{GS}=10V$	$T_C=25^\circ C$	-6.2	A
		$T_C=70^\circ C$	-5.0	A
$I_{DM}$	Pulse Drain Current Tested	-20	A	
$P_D$	Power Dissipation	$T_C=25^\circ C$	0.95	W
$T_J, T_{STG}$	Junction and Storage Temperature Range	-55 to 150	$^\circ C$	

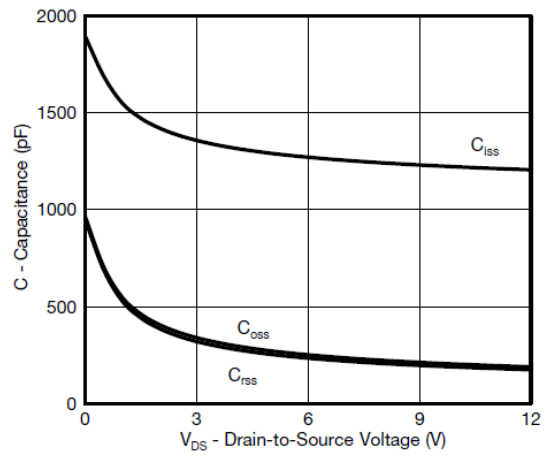
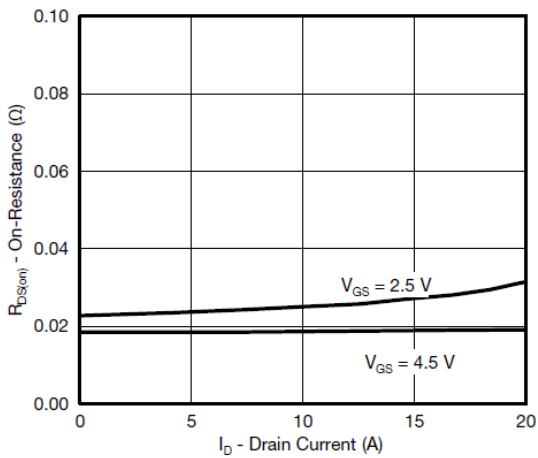
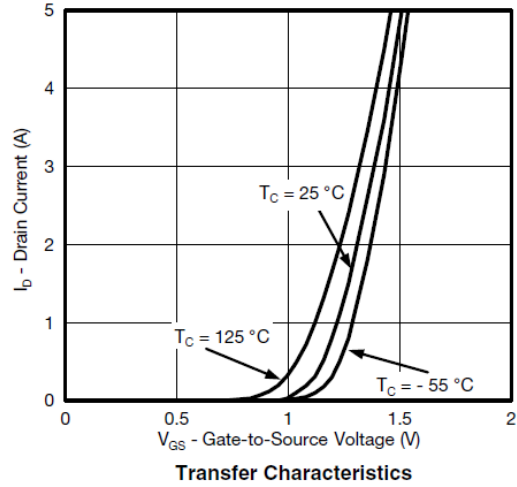
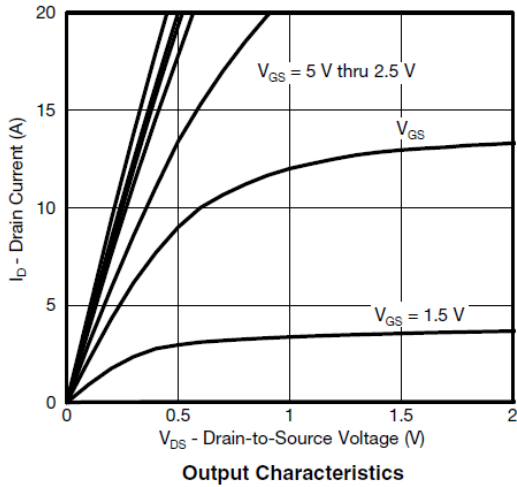
### Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to ambient	100	$^\circ C/W$

**Electrical Characteristics (at  $T_J = 25^\circ\text{C}$  Unless Otherwise Noted)**

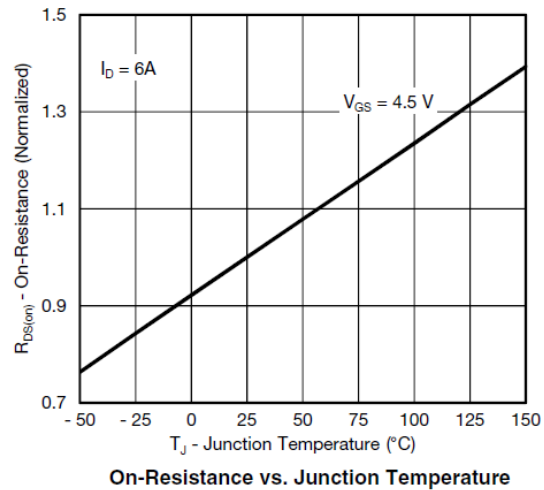
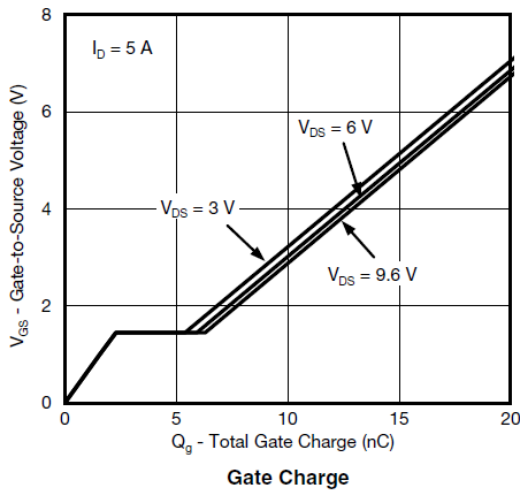
Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
<b>Static Parameters</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-15	--	--	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=-12V, V_{GS}=0V$	--	--	-1	$\mu A$
$I_{GSS}$	Gate-Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$	--	--	$\pm 100$	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4	-0.64	-1	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	$V_{GS}=-4.5V, I_D=-6A$	--	19	25	$m\Omega$
		$V_{GS}=-2.5V, I_D=-2A$	--	23	30	$m\Omega$
$V_{SD}$	Forward Voltage	$I_{SD}=-1A, V_{GS}=0V$	--	--	-1.2	V
<b>Dynamic Parameters</b>						
$C_{iss}$	Input Capacitance	$V_{GS}=0V, V_{DS}=-6V$ $f=1\text{MHZ}$	--	1263	--	pF
$C_{oss}$	Output Capacitance		--	251	--	pF
$C_{rss}$	Reverse Transfer Capacitance		--	232	--	pF
$Q_g$	Total Gate Charge	$V_{DS}=-6V, I_D=-5A$ $V_{GS}=-4.5V$	--	13	--	nC
$Q_{gs}$	Gate-Source Charge		--	2.2	--	nC
$Q_{gd}$	Gate-Drain Charge		--	3.7	--	nC
<b>Switching Parameters</b>						
$t_{D(on)}$	Turn-on Delay Time	$V_{DD}=-6V, R_L=6\Omega$ $R_G=1\Omega, V_{GS}=-4.5V$	--	27	--	nS
$t_r$	Turn-on Rise Time		--	22	--	nS
$t_{D(off)}$	Turn-off Delay Time		--	43	--	nS
$t_f$	Turn-off Fall Time		--	21	--	nS

Typical Characteristics



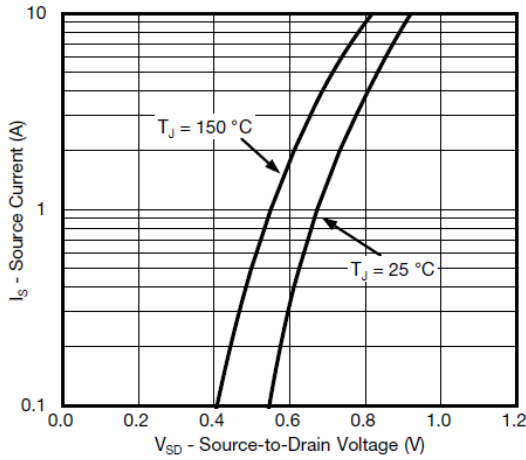
On-Resistance vs. Drain Current and Gate Voltage

Capacitance

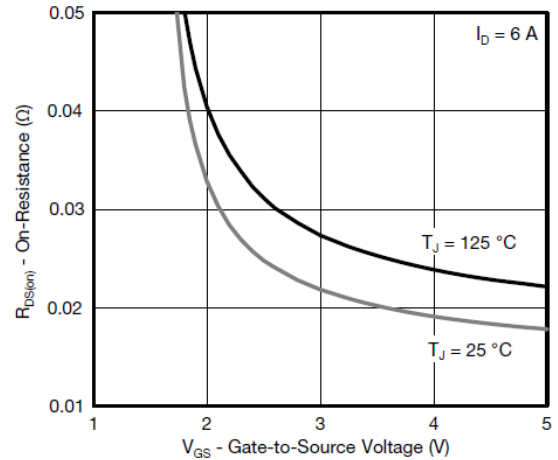


On-Resistance vs. Junction Temperature

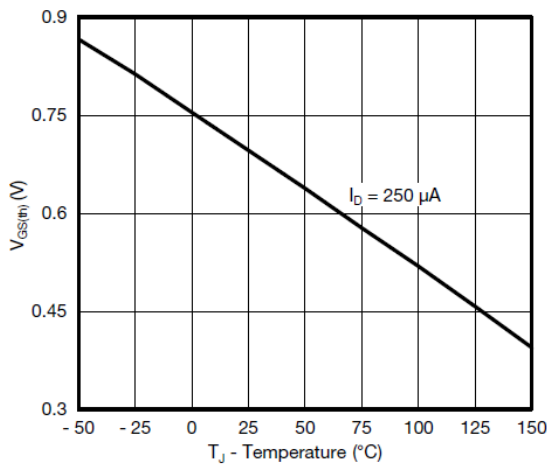
Typical Characteristics



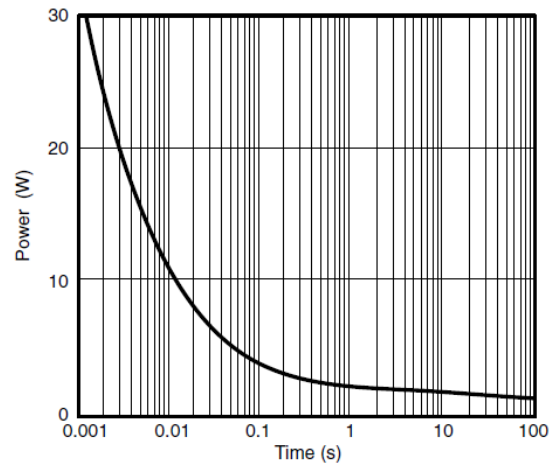
Source-Drain Diode Forward Voltage



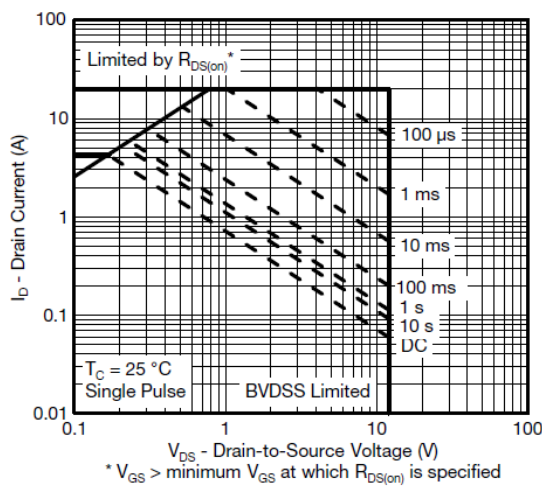
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

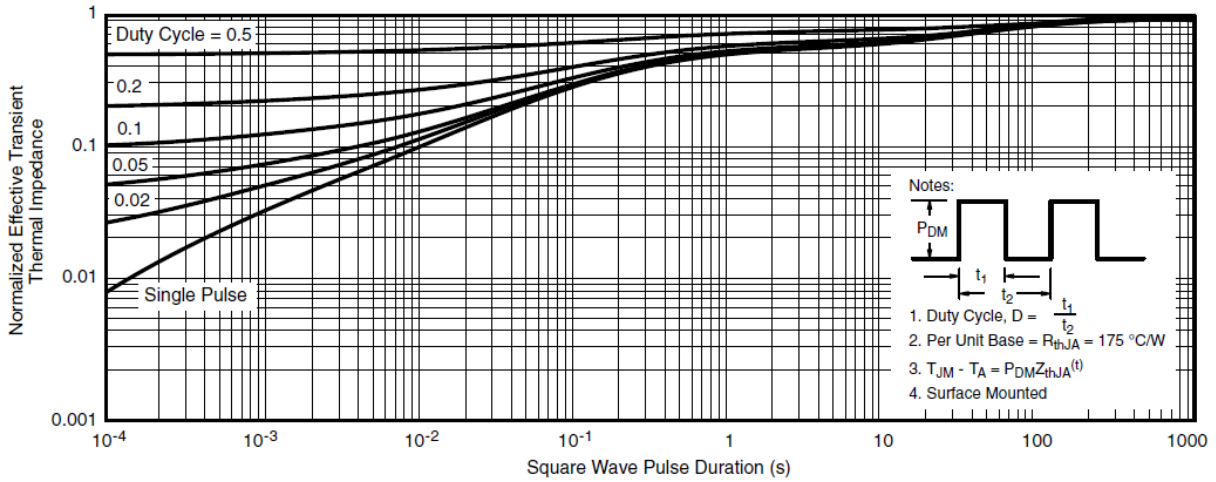


Single Pulse Power

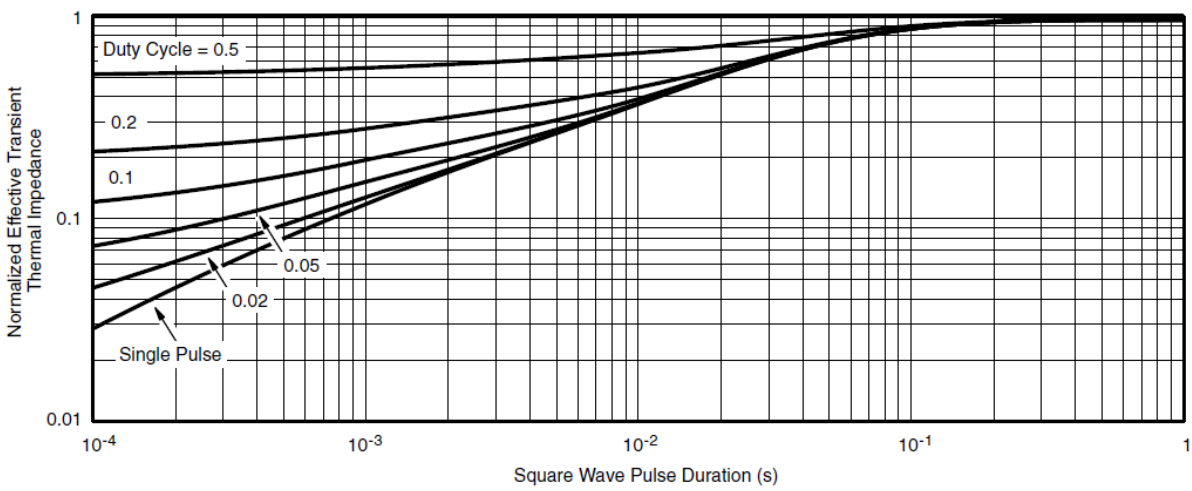


Safe Operating Area

Typical Characteristics

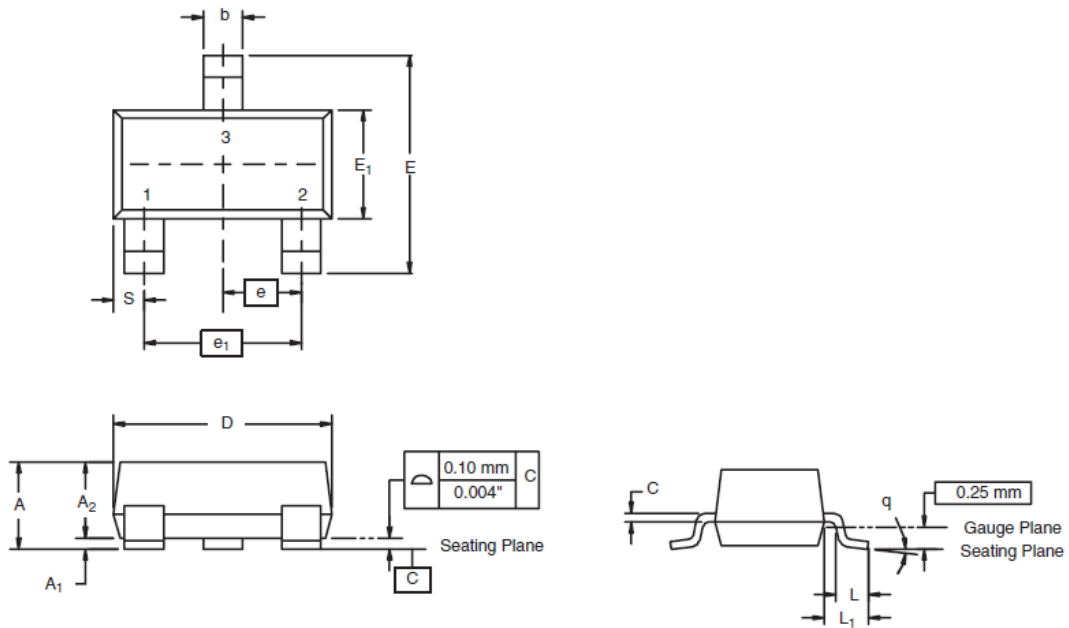


Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

SOT-23 Package Information



Dim	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	0.89	1.12	0.035	0.044
A <sub>1</sub>	0.01	0.10	0.0004	0.004
A <sub>2</sub>	0.88	1.02	0.0346	0.040
b	0.35	0.50	0.014	0.020
c	0.085	0.18	0.003	0.007
D	2.80	3.04	0.110	0.120
E	2.10	2.64	0.083	0.104
E <sub>1</sub>	1.20	1.40	0.047	0.055
e	0.95 BSC		0.0374 Ref	
e <sub>1</sub>	1.90 BSC		0.0748 Ref	
L	0.40	0.60	0.016	0.024
L <sub>1</sub>	0.64 Ref		0.025 Ref	
S	0.50 Ref		0.020 Ref	
q	3°	8°	3°	8°