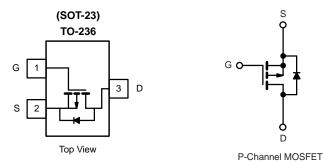


HM2319A-VB Datasheet

P-Channel 30 V (D-S) MOSFET

PRODUCT SUMMARY						
V _{DS} (V)	$R_{DS(on)}\left(\Omega\right)$ Typ.	I _D (A) ^a	Q _g (Typ.)			
	0.046 at V _{GS} = - 10 V	- 5.6				
- 30	0.049 at V _{GS} = - 6 V	- 5	11.4 nC			
	0.054 at V _{GS} = - 4.5 V	-4.5				



FEATURES

- TrenchFET® Power MOSFET
- 100 % R_g Tested



APPLICATIONS

- For Mobile Computing
 - Load Switch
 - Notebook Adaptor Switch
 - DC/DC Converter

ABSOLUTE MAXIMUM RATIN	IGS (T _A = 25 °C	, unless othe	rwise noted)	
Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V _{DS}	- 30	V
Gate-Source Voltage		V_{GS}	± 20	V
	T _C = 25 °C		- 5.6	
Continuous Drain Current /T 150 °C)	T _C = 70 °C	1 , [- 5.1	A
Continuous Drain Current (T _J = 150 °C)	T _A = 25 °C	- I _D	- 5.4 ^{b,c}	
	T _A = 70 °C		- 4.3 ^{b,c}	
Pulsed Drain Current (t = 100 µs)		I _{DM}	- 18	
Continue Source Prain Diada Current	T _C = 25 °C	I _S	- 2.1	1
Continous Source-Drain Diode Current	T _A = 25 °C		- 1 ^{b,c}	1
	T _C = 25 °C		2.5	W
Mayimum Daylar Dissination	T _C = 70 °C]	1.6	
Maximum Power Dissipation	T _A = 25 °C	- P _D -	1.25 ^{b,c}	1 vv
	T _A = 70 °C	1	0.8 ^{b,c}	1
Operating Junction and Storage Temperatur	e Range	T _J , T _{stg}	- 55 to 150	°C

THERMAL RESISTANCE RATINGS						
Parameter		Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient ^{b,d}	t ≤ 5 s	R _{thJA}	75	100	°C/W	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	40	50	C/VV	

Notes:

- a. Based on $T_C = 25$ °C.
- b. Surface mounted on 1" x 1" FR4 board.
- c. t = 5 s.
- d. Maximum under steady state conditions is 166 °C/W.



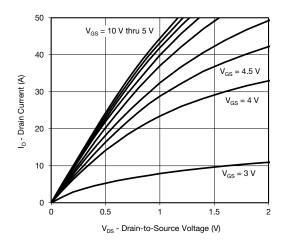
Parameter Syminarian Static VDrain-Source Breakdown Voltage VDS VDS Temperature Coefficient △VDS VGS(th) Temperature Coefficient △VGS(th) Gate-Source Threshold Voltage VGS(th) Gate-Source Leakage IGS Zero Gate Voltage Drain Current IDS On-State Drain Currentare ID(or Drain-Source On-State Resistancear RDS(r Forward Transconductancear 9ts Dynamicb Input Capacitance Input Capacitance Cos Reverse Transfer Capacitance Crs Total Gate Charge Qg Gate-Source Charge Qg Gate Resistance Rg Turn-On Delay Time td(or Rise Time tr Turn-Off Delay Time td(or Fall Time tf Turn-On Delay Time td(or	S	Test Conditions $V_{GS} = 0 \text{ V, } I_D = -250 \text{ μA}$ $I_D = -250 \text{ μA}$ $V_{DS} = V_{GS}, I_D = -250 \text{ μA}$ $V_{DS} = 0 \text{ V, } V_{GS} = \pm 20 \text{ V}$ $V_{DS} = -30 \text{ V, } V_{GS} = 0 \text{ V}$ $V_{DS} = -30 \text{ V, } V_{GS} = 0 \text{ V}$ $V_{DS} = -30 \text{ V, } V_{GS} = -10 \text{ V}$ $V_{GS} = -10 \text{ V, } I_D = -4.4 \text{ A}$ $V_{GS} = -6 \text{ V, } I_D = -4.4 \text{ A}$ $V_{GS} = -6 \text{ V, } I_D = -3.6 \text{ A}$ $V_{DS} = -15 \text{ V, } V_{GS} = 0 \text{ V, } f = 1 \text{ MHz}$ $V_{DS} = -15 \text{ V, } V_{GS} = -10 \text{ V, } I_D = -5.4 \text{ A}$ $V_{DS} = -15 \text{ V, } V_{GS} = -10 \text{ V, } I_D = -5.4 \text{ A}$ $V_{DS} = -15 \text{ V, } V_{GS} = -4.5 \text{ V, } I_D = -5.4 \text{ A}$	- 30 - 0.5	7yp. - 19 4 0.046 0.049 0.054 18 1295 150 130 24 11.4 3.4	- 2.0 ± 100 - 1 - 5 36 17	V mV/°C V nA A A A PF
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	S/T_J	$\begin{split} I_D = & - 250 \ \mu A \\ V_{DS} = & V_{GS} \ , I_D = - 250 \ \mu A \\ V_{DS} = & 0 \ V, V_{GS} = \pm 20 \ V \\ V_{DS} = & - 30 \ V, V_{GS} = 0 \ V \\ V_{DS} = & - 30 \ V, V_{GS} = 0 \ V, T_J = 55 \ ^{\circ}C \\ V_{DS} \leq & - 5 \ V, V_{GS} = - 10 \ V \\ V_{GS} = & - 10 \ V, I_D = - 4.4 \ A \\ V_{GS} = & - 6 \ V, I_D = - 4.4 \ A \\ V_{GS} = & - 6 \ V, I_D = - 3.6 \ A \\ V_{DS} = & - 15 \ V, I_D = - 3.4 \ A \\ \end{split}$	- 0.5	0.046 0.049 0.054 18 1295 150 130 24 11.4	±100 -1 -5	mV/°C V nA μA A S
$\begin{array}{c} V_{DS} \ \text{Temperature Coefficient} & \Delta V_{DS} \\ V_{GS(th)} \ \text{Temperature Coefficient} & \Delta V_{GS(th)} \\ V_{GS(th)} \ \text{Temperature Coefficient} & \Delta V_{GS(th)} \\ Gate-Source Threshold Voltage & V_{GS(th)} \\ Gate-Source Leakage & I_{GS} \\ Zero \ \text{Gate Voltage Drain Current} & I_{DS(th)} \\ Zero \ \text{Gate Voltage Drain Current} & I_{D(th)} \\ On-State \ \text{Drain Current}^a & I_{D(th)} \\ Drain-Source \ \text{On-State Resistance}^a & R_{DS(th)} \\ \hline \text{Drain-Source On-State Resistance}^a & g_{fs} \\ \hline $	S/T_J	$\begin{split} I_D = & - 250 \ \mu A \\ V_{DS} = & V_{GS} \ , I_D = - 250 \ \mu A \\ V_{DS} = & 0 \ V, V_{GS} = \pm 20 \ V \\ V_{DS} = & - 30 \ V, V_{GS} = 0 \ V \\ V_{DS} = & - 30 \ V, V_{GS} = 0 \ V, T_J = 55 \ ^{\circ}C \\ V_{DS} \leq & - 5 \ V, V_{GS} = - 10 \ V \\ V_{GS} = & - 10 \ V, I_D = - 4.4 \ A \\ V_{GS} = & - 6 \ V, I_D = - 4.4 \ A \\ V_{GS} = & - 6 \ V, I_D = - 3.6 \ A \\ V_{DS} = & - 15 \ V, I_D = - 3.4 \ A \\ \end{split}$	- 0.5	0.046 0.049 0.054 18 1295 150 130 24 11.4	±100 -1 -5	mV/°C V nA μA A S
V _{GS(th)} Temperature Coefficient ΔV _{GS(th)} Gate-Source Threshold Voltage V _{GS(th)} Gate-Source Leakage I _{GS} Zero Gate Voltage Drain Current I _{DS} On-State Drain Current ^a I _{D(o)} Drain-Source On-State Resistance ^a R _{DS(th)} Forward Transconductance ^a gfs Dynamic ^b Diput Capacitance C _{is} Output Capacitance C _{os} Reverse Transfer Capacitance C _{rs} Total Gate Charge Q _g Gate-Source Charge Q _g Gate Resistance R _g Turn-On Delay Time t _{d(o)} Rise Time t _r Turn-Off Delay Time t _{d(o)} Fall Time t _f Turn-On Delay Time t _{d(o)}	hh/TJ tth) SS S The state of	$\begin{split} V_{DS} &= V_{GS} , I_D = -250 \mu\text{A} \\ V_{DS} &= 0 \text{V}, V_{GS} = \pm 20 \text{V} \\ V_{DS} &= -30 \text{V}, V_{GS} = 0 \text{V} \\ V_{DS} &= -30 \text{V}, V_{GS} = 0 \text{V}, T_J = 55 ^{\circ}\text{C} \\ V_{DS} &\leq -5 \text{V}, V_{GS} = -10 \text{V} \\ V_{GS} &= -10 \text{V}, I_D = -4.4 \text{A} \\ V_{GS} &= -6 \text{V}, I_D = -4.4 \text{A} \\ V_{GS} &= -6 \text{V}, I_D = -3.6 \text{A} \\ V_{DS} &= -15 \text{V}, I_D = -3.4 \text{A} \\ \end{split}$		0.046 0.049 0.054 18 1295 150 130 24 11.4	±100 -1 -5	V nA μA A Ω S
Gate-Source Threshold Voltage V _{GS(} Gate-Source Leakage I _{GS} Zero Gate Voltage Drain Current I _{DS} On-State Drain Currenta I _{D(o)} Drain-Source On-State Resistancea R _{DS()} Forward Transconductancea g _{fs} Dynamicb C Input Capacitance C _{os} Reverse Transfer Capacitance C _{rs} Total Gate Charge Q _g Gate-Source Charge Q _g Gate Resistance R _g Turn-On Delay Time t _d (or Rise Time t _f Turn-Off Delay Time t _d (or Fall Time t _f Turn-On Delay Time t _d (or	tth) S S S In) On) S S S S S S S S S S S S S S S S S S S	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$ $V_{DS} = -30 \text{ V}, V_{GS} = 0 \text{ V}$ $V_{DS} = -30 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 55 \text{ °C}$ $V_{DS} \le -5 \text{ V}, V_{GS} = -10 \text{ V}$ $V_{GS} = -10 \text{ V}, I_{D} = -4.4 \text{ A}$ $V_{GS} = -6 \text{ V}, I_{D} = -4.4 \text{ A}$ $V_{GS} = -6 \text{ V}, I_{D} = -3.6 \text{ A}$ $V_{DS} = -15 \text{ V}, I_{D} = -3.4 \text{ A}$ $V_{DS} = -15 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$ $V_{DS} = -15 \text{ V}, V_{GS} = -10 \text{ V}, I_{D} = -5.4 \text{ A}$		0.046 0.049 0.054 18 1295 150 130 24 11.4	±100 -1 -5	nA μA A Ω S
Gate-Source Leakage Zero Gate Voltage Drain Current On-State Drain Current Drain-Source On-State Resistance Forward Transconductance Dynamicb Input Capacitance Output Capacitance Reverse Transfer Capacitance Coss Gate-Source Charge Gate-Drain Charge Gate Resistance Turn-On Delay Time Fall Time Turn-On Delay Time	S S S S S S S S S S S S S S S S S S S	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$ $V_{DS} = -30 \text{ V}, V_{GS} = 0 \text{ V}$ $V_{DS} = -30 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 55 \text{ °C}$ $V_{DS} \le -5 \text{ V}, V_{GS} = -10 \text{ V}$ $V_{GS} = -10 \text{ V}, I_{D} = -4.4 \text{ A}$ $V_{GS} = -6 \text{ V}, I_{D} = -4.4 \text{ A}$ $V_{GS} = -6 \text{ V}, I_{D} = -3.6 \text{ A}$ $V_{DS} = -15 \text{ V}, I_{D} = -3.4 \text{ A}$ $V_{DS} = -15 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$ $V_{DS} = -15 \text{ V}, V_{GS} = -10 \text{ V}, I_{D} = -5.4 \text{ A}$		0.049 0.054 18 1295 150 130 24 11.4	±100 -1 -5	nA μA A Ω S
Zero Gate Voltage Drain Current On-State Drain Current ^a Drain-Source On-State Resistance ^a Forward Transconductance ^a Dynamic ^b Input Capacitance Output Capacitance Reverse Transfer Capacitance Gate-Source Charge Gate-Drain Charge Gate Resistance Turn-On Delay Time Fall Time Turn-On Delay Time	S - n) - n - n - n - n - n - n - n - n -	$\begin{split} &V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V} \\ &V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}, T_{J} = 55 \text{ °C} \\ &V_{DS} \leq 5 \text{ V}, V_{GS} = 10 \text{ V} \\ &V_{GS} = 10 \text{ V}, I_{D} = 4.4 \text{ A} \\ &V_{GS} = 6 \text{ V}, I_{D} = 4.4 \text{ A} \\ &V_{GS} = 4.5 \text{ V}, I_{D} = 3.6 \text{ A} \\ &V_{DS} = 15 \text{ V}, I_{D} = 3.4 \text{ A} \\ \end{split}$	- 2.5	0.049 0.054 18 1295 150 130 24 11.4	-1 -5	μA A Ω S PF
On-State Drain Current ^a On-State Drain Current ^a Drain-Source On-State Resistance ^a Forward Transconductance ^a 9fs Dynamic ^b Input Capacitance Output Capacitance Reverse Transfer Capacitance Cos Total Gate Charge Gate-Source Charge Gate-Drain Charge Gate Resistance Turn-On Delay Time Turn-Off Delay Time Tall Time Turn-On Delay Time	n) on) sssssssssssssssssssssssssssssssss	$\begin{split} V_{DS} &= 30 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55 \text{ °C} \\ V_{DS} &\leq 5 \text{ V}, V_{GS} = 10 \text{ V} \\ V_{GS} &= 10 \text{ V}, I_D = 4.4 \text{ A} \\ V_{GS} &= 6 \text{ V}, I_D = 4.4 \text{ A} \\ V_{GS} &= 6 \text{ V}, I_D = 3.6 \text{ A} \\ V_{DS} &= 15 \text{ V}, I_D = 3.4 \text{ A} \end{split}$ $V_{DS} &= 15 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$ $V_{DS} &= 15 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 5.4 \text{ A} \end{split}$	- 2.5	0.049 0.054 18 1295 150 130 24 11.4	-5	A Ω S
Drain-Source On-State Resistance ^a R _{DS(i} Forward Transconductance ^a 9fs Dynamic ^b Input Capacitance C _{is} Output Capacitance Reverse Transfer Capacitance C _{rs} Total Gate Charge Gate-Source Charge Gate-Drain Charge Gate Resistance R _g Turn-On Delay Time Turn-Off Delay Time t _d (on Fall Time Turn-On Delay Time t _d (on	s s s	$V_{DS} \le -5 \text{ V}, V_{GS} = -10 \text{ V}$ $V_{GS} = -10 \text{ V}, I_D = -4.4 \text{ A}$ $V_{GS} = -6 \text{ V}, I_D = -4 \text{ A}$ $V_{GS} = -4.5 \text{ V}, I_D = -3.6 \text{ A}$ $V_{DS} = -15 \text{ V}, I_D = -3.4 \text{ A}$ $V_{DS} = -15 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$ $V_{DS} = -15 \text{ V}, V_{GS} = -10 \text{ V}, I_D = -5.4 \text{ A}$	- 2.5	0.049 0.054 18 1295 150 130 24 11.4	36	Ω S
Drain-Source On-State Resistance ^a R _{DS(i} Forward Transconductance ^a 9fs Dynamic ^b Input Capacitance Output Capacitance C _{os} Reverse Transfer Capacitance C _{rs} Total Gate Charge Gate-Source Charge Gate-Drain Charge Gate Resistance R _g Turn-On Delay Time t _{d(or} Fall Time Turn-On Delay Time t _{d(or} t _{d(or} Total Time Turn-On Delay Time t _{d(or} Turn-On Delay Time t _{d(or} Turn-On Delay Time t _{d(or}	s s s	$V_{GS} = -10 \text{ V}, I_D = -4.4 \text{ A}$ $V_{GS} = -6 \text{ V}, I_D = -4 \text{ A}$ $V_{GS} = -4.5 \text{ V}, I_D = -3.6 \text{ A}$ $V_{DS} = -15 \text{ V}, I_D = -3.4 \text{ A}$ $V_{DS} = -15 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$ $V_{DS} = -15 \text{ V}, V_{GS} = -10 \text{ V}, I_D = -5.4 \text{ A}$	- 2.3	0.049 0.054 18 1295 150 130 24 11.4		Ω S
Forward Transconductance ^a Dynamic ^b Input Capacitance Output Capacitance Reverse Transfer Capacitance Cos Total Gate Charge Gate-Source Charge Gate-Drain Charge Gate Resistance Turn-On Delay Time Turn-Off Delay Time Turn-On Delay Time	s s s	$V_{GS} = -6 \text{ V}, I_D = -4 \text{ A}$ $V_{GS} = -4.5 \text{ V}, I_D = -3.6 \text{ A}$ $V_{DS} = -15 \text{ V}, I_D = -3.4 \text{ A}$ $V_{DS} = -15 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$ $V_{DS} = -15 \text{ V}, V_{GS} = -10 \text{ V}, I_D = -5.4 \text{ A}$		0.049 0.054 18 1295 150 130 24 11.4		S pF
Forward Transconductance ^a Dynamic ^b Input Capacitance Output Capacitance Reverse Transfer Capacitance Cos Total Gate Charge Gate-Source Charge Gate-Drain Charge Gate Resistance Turn-On Delay Time Turn-Off Delay Time Turn-On Delay Time Turn-On Delay Time Turn-On Delay Time total Gate Charge Turn-Off Delay Time Turn-Off Delay Time Turn-On Delay Time	s s s	$V_{GS} = -4.5 \text{ V}, I_D = -3.6 \text{ A}$ $V_{DS} = -15 \text{ V}, I_D = -3.4 \text{ A}$ $V_{DS} = -15 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$ $V_{DS} = -15 \text{ V}, V_{GS} = -10 \text{ V}, I_D = -5.4 \text{ A}$		0.054 18 1295 150 130 24 11.4		S pF
Dynamic ^b Input Capacitance C _{is} Output Capacitance C _{os} Reverse Transfer Capacitance C _{rs} Total Gate Charge Q _g Gate-Source Charge Q _g Gate-Drain Charge Q _g Gate Resistance R _g Turn-On Delay Time t _d (or Rise Time t _r Turn-Off Delay Time t _d (or Fall Time t _f Turn-On Delay Time t _d (or	s s	$V_{DS} = -15 \text{ V}, I_{D} = -3.4 \text{ A}$ $V_{DS} = -15 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$ $V_{DS} = -15 \text{ V}, V_{GS} = -10 \text{ V}, I_{D} = -5.4 \text{ A}$		18 1295 150 130 24 11.4		pF
Dynamic ^b Input Capacitance C _{is} Output Capacitance C _{os} Reverse Transfer Capacitance C _{rs} Total Gate Charge Q _g Gate-Source Charge Q _g Gate-Drain Charge Q _g Gate Resistance R _g Turn-On Delay Time t _d (or Rise Time t _r Turn-Off Delay Time t _d (or Fall Time t _f Turn-On Delay Time t _d (or	s s	$V_{DS} = -15 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$ $V_{DS} = -15 \text{ V}, V_{GS} = -10 \text{ V}, I_{D} = -5.4 \text{ A}$		1295 150 130 24 11.4		pF
$\begin{array}{c} \text{Input Capacitance} & C_{\text{is}} \\ \text{Output Capacitance} & C_{\text{os}} \\ \text{Reverse Transfer Capacitance} & C_{\text{rs}} \\ \text{Reverse Transfer Capacitance} & C_{\text{rs}} \\ \text{Total Gate Charge} & Q_{\text{g}} \\ \text{Gate-Source Charge} & Q_{\text{gr}} \\ \text{Gate-Drain Charge} & Q_{\text{gr}} \\ \text{Gate Resistance} & R_{\text{g}} \\ \text{Turn-On Delay Time} & t_{\text{d(oi)}} \\ \text{Rise Time} & t_{\text{r}} \\ \text{Turn-Off Delay Time} & t_{\text{d(oi)}} \\ \text{Fall Time} & t_{\text{f}} \\ \text{Turn-On Delay Time} & t_{\text{d(oi)}} \\ \end{array}$	s s	V _{DS} = - 15 V, V _{GS} = - 10 V, I _D = - 5.4 A		150 130 24 11.4		-
$\begin{array}{c} \text{Output Capacitance} & & & & & & & & & & $	s s	V _{DS} = - 15 V, V _{GS} = - 10 V, I _D = - 5.4 A		150 130 24 11.4		- -
$ \begin{array}{c} \text{Reverse Transfer Capacitance} & C_{rs} \\ \hline \text{Total Gate Charge} & Q_g \\ \hline \text{Gate-Source Charge} & Q_{gs} \\ \hline \text{Gate-Drain Charge} & Q_g \\ \hline \text{Gate Resistance} & R_g \\ \hline \text{Turn-On Delay Time} & t_{d(o)} \\ \hline \text{Rise Time} & t_r \\ \hline \text{Turn-Off Delay Time} & t_{d(o)} \\ \hline \text{Fall Time} & t_f \\ \hline \text{Turn-On Delay Time} & t_{d(o)} \\ \hline \end{array} $	s s	V _{DS} = - 15 V, V _{GS} = - 10 V, I _D = - 5.4 A		130 24 11.4		-
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	s			24 11.4		
$\begin{array}{c} \text{Gate-Source Charge} & Q_{gi} \\ \text{Gate-Drain Charge} & Q_{gi} \\ \text{Gate Resistance} & R_{g} \\ \text{Turn-On Delay Time} & t_{d(oi)} \\ \text{Rise Time} & t_{r} \\ \text{Turn-Off Delay Time} & t_{d(oi)} \\ \text{Fall Time} & t_{f} \\ \text{Turn-On Delay Time} & t_{d(oi)} \\ \end{array}$	s d			11.4		
$\begin{array}{c} \text{Gate-Source Charge} & Q_{gi} \\ \text{Gate-Drain Charge} & Q_{gi} \\ \text{Gate Resistance} & R_{g} \\ \text{Turn-On Delay Time} & t_{d(oi)} \\ \text{Rise Time} & t_{r} \\ \text{Turn-Off Delay Time} & t_{d(oi)} \\ \text{Fall Time} & t_{f} \\ \text{Turn-On Delay Time} & t_{d(oi)} \\ \end{array}$	s d	V _{DS} = - 15 V, V _{GS} = - 4.5 V, I _D = - 5.4 A			17	~~
$\begin{array}{c} \text{Gate-Drain Charge} & \text{Q_{gt}} \\ \text{Gate Resistance} & \text{R_g} \\ \text{Turn-On Delay Time} & \text{$t_{d(o)}$} \\ \text{Rise Time} & \text{t_r} \\ \text{Turn-Off Delay Time} & \text{$t_{d(o)}$} \\ \text{Fall Time} & \text{t_f} \\ \text{Turn-On Delay Time} & \text{$t_{d(o)}$} \\ \end{array}$	d	$V_{DS} = -15 \text{ V}, V_{GS} = -4.5 \text{ V}, I_{D} = -5.4 \text{ A}$		3.4		nC
$ \begin{array}{ccc} \text{Gate Resistance} & & R_g \\ \hline \text{Turn-On Delay Time} & & t_{d(o)} \\ \hline \text{Rise Time} & & t_r \\ \hline \text{Turn-Off Delay Time} & & t_{d(o)} \\ \hline \text{Fall Time} & & t_f \\ \hline \text{Turn-On Delay Time} & & t_{d(o)} \\ \hline \end{array} $				0	<u> </u>	
$ \begin{array}{llllllllllllllllllllllllllllllllllll$				3.8		
$ \begin{array}{ccc} \text{Rise Time} & & & t_r \\ \text{Turn-Off Delay Time} & & & t_{d(ol)} \\ \text{Fall Time} & & & t_f \\ \text{Turn-On Delay Time} & & & t_{d(ol)} \\ \end{array} $		f = 1 MHz	1.5	7.7	15.4	Ω
	1)			13	20	
$ \begin{array}{ccc} & & & & \\ \text{Fall Time} & & & & \\ \text{Turn-On Delay Time} & & & & \\ & & & & \\ & & & & \\ \end{array} $		V_{DD} = - 15 V, R_L = 3.5 Ω		4	8	- - -
Turn-On Delay Time t _{d(or}	f)	$I_D\cong$ - 4.3 A, V_{GEN} = - 10 V, R_g = 1 Ω		38	57	
,				6	12	
	n)			28	42	ns
Rise Time t _r	.,	$V_{DD} = -15 \text{ V, R}_{L} = 3.5 \Omega$		16	24	-
Turn-Off Delay Time t _{d(of}	f)	$I_D \cong -4.3 \text{ A}, V_{GEN} = -4.5 \text{ V}, R_q = 1 \Omega$		30	45	
Fall Time t _f	.,	, i		10	20	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current Is		T _C = 25 °C			- 2.1	
Pulse Diode Forward Current (t = 100 μs)		-			- 80	Α
Body Diode Voltage V _{SI}		I _S = - 4.3 A, V _{GS} = 0 V		- 0.8	- 1.2	V
Body Diode Reverse Recovery Time t _{rr}		5 / GC		15	23	ns
Body Diode Reverse Recovery Charge Q _{ri}				7	14	nC
		$I_F = -4.3 \text{ A}, \text{ dI/dt} = 100 \text{ A/}\mu\text{s}, T_J = 25 ^{\circ}\text{C}$		8	17	110
$ \begin{array}{lll} \text{Reverse Recovery Fall Time} & & t_a \\ \text{Reverse Recovery Rise Time} & & t_b \end{array} $				0	1	ns

Notes:

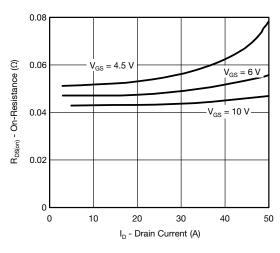
- a. Pulse test; pulse width $\leq 300~\mu s,$ duty cycle $\leq 2~\%.$
- b. Guaranteed by design, not subject to production testing.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

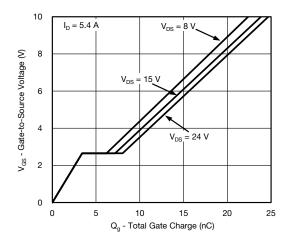




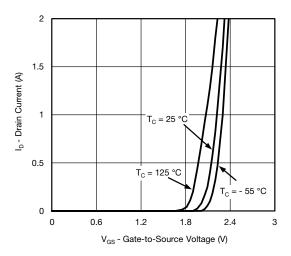
Output Characteristics



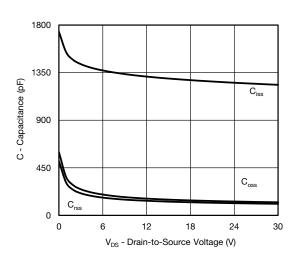
On-Resistance vs. Drain Current



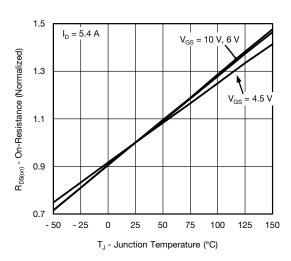
Gate Charge



Transfer Characteristics

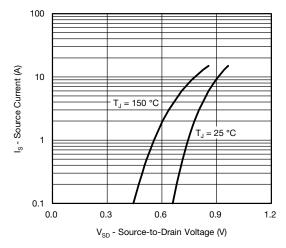


Capacitance

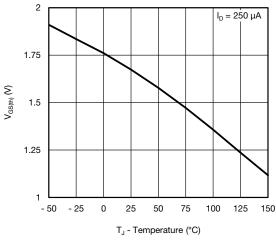


On-Resistance vs. Junction Temperature

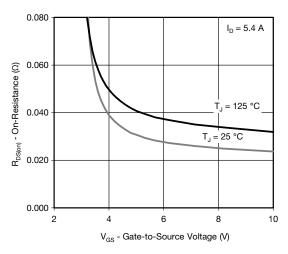




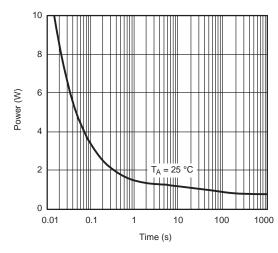
Source-Drain Diode Forward Voltage



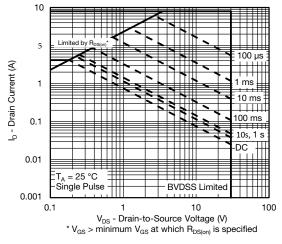
Threshold Voltage



On-Resistance vs. Gate-to-Source Voltage

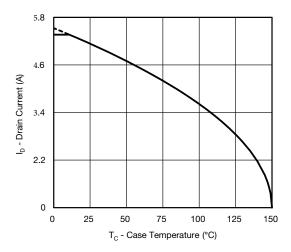


Single Pulse Power (Junction-to-Ambient)

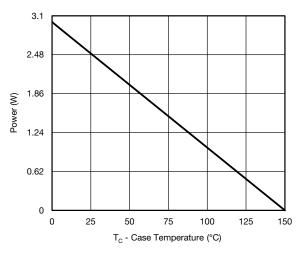


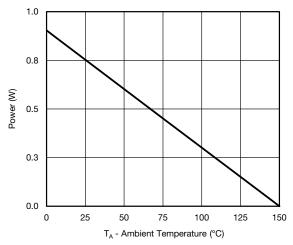
Safe Operating Area, Junction-to-Ambient





Current Derating*



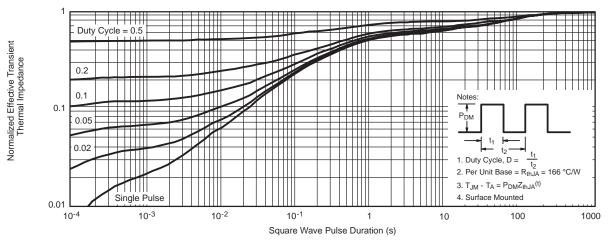


Power, Junction-to-Foot

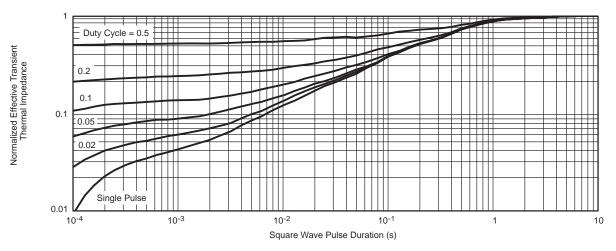
Power, Junction-to-Ambient

^{*} 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.





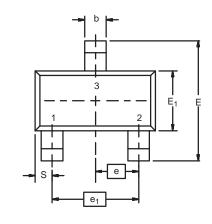
Normalized Thermal Transient Impedance, Junction-to-Ambient

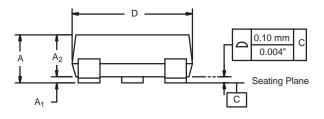


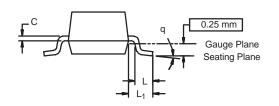
Normalized Thermal Transient Impedance, Junction-to-Foot



SOT-23 (TO-236): 3-LEAD







Dim	MILLIN	IETERS	INCHES		
	Min	Max	Min	Max	
Α	0.89	1.12	0.035	0.044	
A ₁	0.01	0.10	0.0004	0.004	
A ₂	0.88	1.02	0.0346	0.040	
b	0.35	0.50	0.014	0.020	
С	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 ₁	1.20	1.40	0.047	0.055	
е	0.95 BSC		0.0374 Ref		
e ₁	1.90 BSC		0.0748 Ref		
L	0.40	0.60	0.016	0.024	
L ₁	0.64 Ref		0.025 Ref		
S	0.50 Ref		0.020) Ref	
q	3°	8°	3°	8°	
ECN: S-03946-Rev. K. 09-	Jul-01				

DWG: 5479



RECOMMENDED MINIMUM PADS FOR SOT-23



Recommended Minimum Pads Dimensions in Inches/(mm)



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