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FDMC8651 N-Channel Power Trench[®] MOSFET 30 V, 20 A, 6.1 m Ω

Features

- Max $r_{DS(on)}$ = 6.1 m Ω at V_{GS} = 4.5 V, I_D = 15 A
- Max $r_{DS(on)}$ = 9.3 m Ω at V_{GS} = 2.5 V, I_D = 12 A
- Low Profile 1 mm max in Power 33
- 100% UIL Tested
- RoHS Compliant

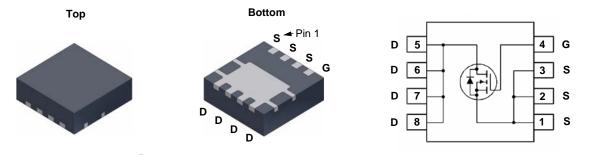


General Description

This device has been designed specifically to improve the efficiency of DC/DC converters. Using new techniques in MOSFET construction, the various components of gate charge and capacitance have been optimized to reduce switching losses. Low gate resistance and very low Miller charge enable excellent performance with both adaptive and fixed dead time gate drive circuits. Very low $r_{DS(on)}$ has been maintained to provide a sub logic-level device.

Applications

- Synchronous rectifier
- 3.3 V input synchronous buck switch



Power 33

MOSFET Maximum Ratings T_A = 25 °C unless otherwise noted

Symbol	Parameter			Ratings	Units		
V _{DS}	Drain to Source Voltage		30	V			
V _{GS}	Gate to Source Voltage			±12	V		
	Drain Current-Continuous (Package limited) $T_C = 25 \ ^{\circ}C$ -Continuous (Silicon limited) $T_C = 25 \ ^{\circ}C$			20			
				64			
I _D		-Continuous	T _A = 25 °C	C (Note 1a)	15	Α	
		-Pulsed			60		
E _{AS}	Single Pulse Avalanche Energy (Note 3)			128	mJ		
р	Power Dis	sipation	T _C = 25 °	C	41	w	
P _D	Power Dis	sipation	T _A = 25 °C	C (Note 1a)	2.3	VV	
T _J , T _{STG}	Operating and Storage Junction Temperature Range			-55 to +150	°C		
Thermal Ch	naracterist	tics					
$R_{\theta JC}$	Thermal Resistance, Junction to Case			3	9 0 AA		
$R_{ ext{ heta}JA}$	Thermal Resistance, Junction to Ambient (Note 1a)			53	°C/W		
Package M	arking and	d Ordering Information					
Device Ma	arking	Device	Package	Reel Size	Tape Width	Quantity	

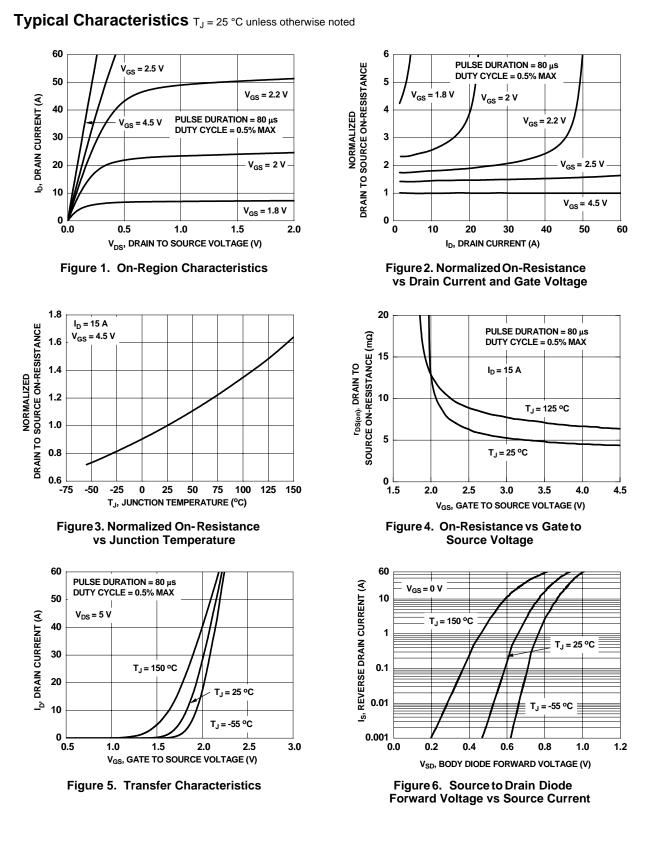
FDMC8651 FDMC8651 Power 33 13 " 12 mm	3000 units

$\begin{array}{c c} \Delta BV_{DSS} \\ \overline{\Delta}T_{J} \\ \hline \\ I_{DSS} \\ \hline \\ I_{GSS} \\ \hline \\ I_{GSS} \\ \hline \\ \hline \\ I_{GSS} \\ \hline \\ \hline \\ \hline \\ On Charact \\ \hline \\ $	Drain to Source Breakdown Voltage Breakdown Voltage Temperature Coefficient Zero Gate Voltage Drain Current Gate to Source Leakage Current	$\begin{split} & _{D} = 250 \ \mu\text{A}, \ V_{GS} = 0 \ V \\ & _{D} = 250 \ \mu\text{A}, \ referenced \ to \ 25 \ ^{\circ}\text{C} \\ &V_{DS} = 24 \ V, \ V_{GS} = 0 \ V \\ &V_{GS} = \pm 12 \ V, \ V_{DS} = 0 \ V \\ \hline &V_{GS} = \pm 12 \ V, \ V_{DS} = 0 \ V \\ \hline &V_{GS} = 4.5 \ V, \ I_{D} = 15 \ \text{A} \\ &V_{GS} = 4.5 \ V, \ I_{D} = 15 \ \text{A} \\ \hline &V_{GS} = 4.5 \ V, \ I_{D} = 15 \ \text{A} \\ \hline &V_{DD} = 5 \ V, \ I_{D} = 15 \ \text{A} \\ \hline &V_{DS} = 15 \ V, \ V_{GS} = 0 \ V, \\ f = 1 \ \text{MHz} \\ \hline &V_{DD} = 15 \ V, \ I_{D} = 15 \ \text{A}, \\ \hline &V_{DD} = 15 \ V, \ I_{D} = 15 \ \text{A}, \\ \hline &V_{DD} = 15 \ V, \ I_{D} = 15 \ \text{A}, \\ \hline &V_{DD} = 15 \ V, \ I_{D} = 15 \ \text{A}, \\ \hline &V_{DD} = 15 \ V, \ I_{D} = 15 \ \text{A}, \\ \hline &V_{DD} = 15 \ V, \ I_{D} = 15 \ \text{A}, \\ \hline &V_{DD} = 15 \ V, \ I_{D} = 15 \ \text{A}, \\ \hline &V_{DD} = 15 \ V, \ I_{D} = 15 \ \text{A}, \\ \hline &V_{DD} = 15 \ V, \ I_{D} = 15 \ \text{A}, \\ \hline &V_{DD} = 15 \ V, \ I_{D} = 15 \ \text{A}, \\ \hline &V_{DD} = 15 \ V, \ I_{D} = 15 \ \text{A}, \\ \hline &V_{DD} = 15 \ V, \ V_{DD} = 15 \ V, \$	30	27.5 1.1 -4.4 4.3 6.2 6.3 91 2530 865 140 0.8 18	1 ±100 1.5 6.1 9.3 9.0 3365 1150 205 31	V mV/°C μA nA V mV/°C mΩ S pF pF pF Ω
$\begin{array}{c c} 3V_{DSS} & \Gamma \\ \hline \Delta BV_{DSS} & \hline \\ \overline{\Delta T_J} & C \\ \hline \\ DSS & \overline{2} \\ \hline \\ GSS & \overline{2} \\ \hline \\ GSS & \overline{2} \\ \hline \\ On Charact \\ \hline \\ \hline \\ V_{GS(th)} & \overline{1} \\ \hline \\ \hline \\ \hline \\ \hline \\ C_{S}(on) & \overline{1} \\ \hline \\ \hline \\ \hline \\ \hline \\ \hline \\ \hline \\ DS(on) & \overline{1} \\ \hline \\ $	Drain to Source Breakdown Voltage Breakdown Voltage Temperature Coefficient Zero Gate Voltage Drain Current Gate to Source Leakage Current teristics Gate to Source Threshold Voltage Gate to Source Threshold Voltage Temperature Coefficient Static Drain to Source On Resistance Forward Transconductance haracteristics Input Capacitance Output Capacitance Gate Resistance Characteristics Turn-On Delay Time Rise Time	$I_{D} = 250 \ \mu\text{A}, \text{ referenced to } 25 \ ^{\circ}\text{C}$ $V_{DS} = 24 \ ^{\circ}\text{V}, V_{GS} = 0 \ ^{\circ}\text{V}$ $V_{GS} = \pm 12 \ ^{\circ}\text{V}, V_{DS} = 0 \ ^{\circ}\text{V}$ $V_{GS} = \frac{12 \ ^{\circ}\text{V}, V_{DS} = 0 \ ^{\circ}\text{V}$ $I_{D} = 250 \ ^{\mu}\text{A}, \text{ referenced to } 25 \ ^{\circ}\text{C}$ $V_{GS} = 4.5 \ ^{\circ}\text{V}, I_{D} = 15 \ ^{\circ}\text{A}$ $V_{GS} = 2.5 \ ^{\circ}\text{V}, I_{D} = 15 \ ^{\circ}\text{A}, T_{J} = 125 \ ^{\circ}\text{C}$ $V_{DD} = 5 \ ^{\circ}\text{V}, I_{D} = 15 \ ^{\circ}\text{A}$ $V_{DS} = 15 \ ^{\circ}\text{V}, V_{GS} = 0 \ ^{\circ}\text{V}, I_{D} = 15 \ ^{\circ}\text{A}$ $V_{DD} = 15 \ ^{\circ}\text{V}, V_{GS} = 0 \ ^{\circ}\text{V}, I_{D} = 15 \ ^{\circ}\text{A}, I_{D} = 15 \ ^{\circ}\text{A},$		1.1 -4.4 4.3 6.2 6.3 91 2530 865 140 0.8	±100 1.5 6.1 9.3 9.0 3365 1150 205	mV/°C μA nA V mV/°C mQ S pF pF pF pF
$\begin{array}{c c} \Delta B V_{DSS} & F \\ \hline \Delta T_{J} & C \\ \hline \Delta T_{J} & C \\ \hline \Delta T_{J} & C \\ \hline DSS & 2 \\ \hline DSS & 2 \\ \hline On Charact \\ \hline On Charact \\ \hline V_{GS(th)} & C \\ \hline \Delta V_{GS(th)} & C \\ \hline \Delta T_{J} & T \\ \hline DS(on) & F \\ \hline Opnamic Cl \\ \hline C_{iss} & F \\ \hline Opnamic Cl \\ \hline C_{iss} & F \\ \hline Opnamic Cl \\ \hline C_{iss} & F \\ \hline Opnamic Cl \\ \hline C_{iss} & F \\ \hline Opnamic Cl \\ \hline C_{iss} & F \\ \hline Opnamic Cl \\ \hline C_{iss} & F \\ \hline Opnamic Cl \\ \hline C_{iss} & F \\ \hline Opnamic Cl \\ \hline C_{iss} & F \\ \hline Opnamic Cl \\ \hline C_{iss} & F \\ \hline Opnamic Cl \\ \hline C_{iss} & F \\ \hline Opnamic Cl \\ \hline C_{iss} & F \\ \hline Opnamic Cl \\ \hline Opn$	Breakdown Voltage Temperature Coefficient Zero Gate Voltage Drain Current Gate to Source Leakage Current teristics Gate to Source Threshold Voltage Gate to Source Threshold Voltage Temperature Coefficient Static Drain to Source On Resistance Forward Transconductance haracteristics Input Capacitance Output Capacitance Reverse Transfer Capacitance Gate Resistance Characteristics Turn-On Delay Time Rise Time	$I_{D} = 250 \ \mu\text{A}, \text{ referenced to } 25 \ ^{\circ}\text{C}$ $V_{DS} = 24 \ ^{\circ}\text{V}, V_{GS} = 0 \ ^{\circ}\text{V}$ $V_{GS} = \pm 12 \ ^{\circ}\text{V}, V_{DS} = 0 \ ^{\circ}\text{V}$ $V_{GS} = \frac{12 \ ^{\circ}\text{V}, V_{DS} = 0 \ ^{\circ}\text{V}$ $I_{D} = 250 \ ^{\mu}\text{A}, \text{ referenced to } 25 \ ^{\circ}\text{C}$ $V_{GS} = 4.5 \ ^{\circ}\text{V}, I_{D} = 15 \ ^{\circ}\text{A}$ $V_{GS} = 2.5 \ ^{\circ}\text{V}, I_{D} = 15 \ ^{\circ}\text{A}, T_{J} = 125 \ ^{\circ}\text{C}$ $V_{DD} = 5 \ ^{\circ}\text{V}, I_{D} = 15 \ ^{\circ}\text{A}$ $V_{DS} = 15 \ ^{\circ}\text{V}, V_{GS} = 0 \ ^{\circ}\text{V}, I_{D} = 15 \ ^{\circ}\text{A}$ $V_{DD} = 15 \ ^{\circ}\text{V}, V_{GS} = 0 \ ^{\circ}\text{V}, I_{D} = 15 \ ^{\circ}\text{A}, I_{D} = 15 \ ^{\circ}\text{A},$	0.8	1.1 -4.4 4.3 6.2 6.3 91 2530 865 140 0.8	±100 1.5 6.1 9.3 9.0 3365 1150 205	μΑ nA V mV/°C mΩ S S
$\begin{array}{c c} \hline & & & \\ \hline DSS & & Z \\ \hline GSS & & C \\ \hline \\ \hline GSS & & C \\ \hline \\$	Zero Gate Voltage Drain Current Gate to Source Leakage Current teristics Gate to Source Threshold Voltage Gate to Source Threshold Voltage Temperature Coefficient Static Drain to Source On Resistance Forward Transconductance haracteristics Input Capacitance Output Capacitance Reverse Transfer Capacitance Gate Resistance Characteristics Turn-On Delay Time Rise Time	$V_{DS} = 24 \text{ V}, V_{GS} = 0 \text{ V}$ $V_{GS} = \pm 12 \text{ V}, V_{DS} = 0 \text{ V}$ $V_{GS} = V_{DS}, I_D = 250 \text{ µA}$ $I_D = 250 \text{ µA}, \text{ referenced to } 25 \text{ °C}$ $V_{GS} = 4.5 \text{ V}, I_D = 15 \text{ A}$ $V_{GS} = 2.5 \text{ V}, I_D = 12 \text{ A}$ $V_{GS} = 4.5 \text{ V}, I_D = 15 \text{ A}, T_J = 125 \text{ °C}$ $V_{DD} = 5 \text{ V}, I_D = 15 \text{ A}$ $V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V},$ $f = 1 \text{ MHz}$ $V_{DD} = 15 \text{ V}, I_D = 15 \text{ A},$	0.8	-4.4 4.3 6.2 6.3 91 2530 865 140 0.8	±100 1.5 6.1 9.3 9.0 3365 1150 205	nA V mV/°C mΩ S PF pF pF
GSS GSS On Charact $\sqrt{GS(th)}$ G $\Delta V_{GS(th)}$ G ΔT_J T DS(on) S DFS F Dynamic Cl Criss I Coss G Criss I Coss G Criss F Quantic Cl C Coss G Criss F Quantic Cl C Coss G Cass F Quantic Cl C Coss G Quantic Cl C Coss G Quantic Cl C Cass F Quantic Cl T Quantic Cl T <	Gate to Source Leakage Current teristics Gate to Source Threshold Voltage Gate to Source Threshold Voltage Temperature Coefficient Static Drain to Source On Resistance Forward Transconductance haracteristics Input Capacitance Output Capacitance Reverse Transfer Capacitance Gate Resistance Characteristics Turn-On Delay Time Rise Time	$V_{GS} = \pm 12 \text{ V}, V_{DS} = 0 \text{ V}$ $V_{GS} = V_{DS}, I_D = 250 \text{ µA}$ $I_D = 250 \text{ µA}, \text{ referenced to } 25 ^{\circ}\text{C}$ $V_{GS} = 4.5 \text{ V}, I_D = 15 \text{ A}$ $V_{GS} = 2.5 \text{ V}, I_D = 12 \text{ A}$ $V_{GS} = 4.5 \text{ V}, I_D = 15 \text{ A}, T_J = 125 ^{\circ}\text{C}$ $V_{DD} = 5 \text{ V}, I_D = 15 \text{ A}$ $V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V},$ $f = 1 \text{ MHz}$ $V_{DD} = 15 \text{ V}, I_D = 15 \text{ A},$	0.8	-4.4 4.3 6.2 6.3 91 2530 865 140 0.8	±100 1.5 6.1 9.3 9.0 3365 1150 205	nA V mV/°C mΩ S S
On Charact $\sqrt{GS(th)}$ Q $\Delta V_{GS(th)}$ Q ΔT_J T DS(on) S Coss G Coss G Gost F Q(off) F Q _{gd} G Drain-Source G	teristics Gate to Source Threshold Voltage Gate to Source Threshold Voltage Temperature Coefficient Static Drain to Source On Resistance Forward Transconductance haracteristics Input Capacitance Output Capacitance Reverse Transfer Capacitance Gate Resistance Characteristics Turn-On Delay Time Rise Time	$V_{GS} = V_{DS}, I_D = 250 \ \mu A$ $I_D = 250 \ \mu A, referenced to 25 \ ^{\circ}C$ $V_{GS} = 4.5 \ V, I_D = 15 \ A$ $V_{GS} = 2.5 \ V, I_D = 12 \ A$ $V_{GS} = 4.5 \ V, I_D = 15 \ A, T_J = 125 \ ^{\circ}C$ $V_{DD} = 5 \ V, I_D = 15 \ A$ $V_{DS} = 15 \ V, V_{GS} = 0 \ V, f = 1 \ MHz$	0.8	-4.4 4.3 6.2 6.3 91 2530 865 140 0.8	1.5 6.1 9.3 9.0 3365 1150 205	V mV/°C mΩ S PF pF pF
$\begin{array}{c c} V_{GS(th)} & C \\ \hline \Delta V_{GS(th)} & T \\ \hline \Delta T_J & T \\ \hline DS(on) & S \\ \hline S \\ \hline DS(on) & S \\ \hline S \\ \hline S \\ S \\ S \\ S \\ S \\ S \\ S \\$	Gate to Source Threshold Voltage Gate to Source Threshold Voltage Temperature Coefficient Static Drain to Source On Resistance Forward Transconductance haracteristics Input Capacitance Output Capacitance Qutput Capacitance Reverse Transfer Capacitance Gate Resistance Characteristics Turn-On Delay Time Rise Time	$I_{D} = 250 \ \mu\text{A}, \text{ referenced to } 25 \ ^{\circ}\text{C}$ $V_{GS} = 4.5 \ V, \ I_{D} = 15 \ \text{A}$ $V_{GS} = 2.5 \ V, \ I_{D} = 12 \ \text{A}$ $V_{GS} = 4.5 \ V, \ I_{D} = 15 \ \text{A}, \ T_{J} = 125 \ ^{\circ}\text{C}$ $V_{DD} = 5 \ V, \ I_{D} = 15 \ \text{A}$ $V_{DS} = 15 \ V, \ V_{GS} = 0 \ V, \ f = 1 \ \text{MHz}$	0.8	-4.4 4.3 6.2 6.3 91 2530 865 140 0.8	6.1 9.3 9.0 3365 1150 205	mV/°C mΩ S pF pF pF
$\begin{array}{c c} \Delta V_{GS(th)} & G \\ \hline \Delta T_J & T \\ \hline DS(on) & S \\ \hline $	Gate to Source Threshold Voltage Temperature Coefficient Static Drain to Source On Resistance Forward Transconductance haracteristics Input Capacitance Output Capacitance Gate Resistance Gate Resistance Characteristics Turn-On Delay Time Rise Time	$I_{D} = 250 \ \mu\text{A}, \text{ referenced to } 25 \ ^{\circ}\text{C}$ $V_{GS} = 4.5 \ V, \ I_{D} = 15 \ \text{A}$ $V_{GS} = 2.5 \ V, \ I_{D} = 12 \ \text{A}$ $V_{GS} = 4.5 \ V, \ I_{D} = 15 \ \text{A}, \ T_{J} = 125 \ ^{\circ}\text{C}$ $V_{DD} = 5 \ V, \ I_{D} = 15 \ \text{A}$ $V_{DS} = 15 \ V, \ V_{GS} = 0 \ V, \ f = 1 \ \text{MHz}$	0.8	-4.4 4.3 6.2 6.3 91 2530 865 140 0.8	6.1 9.3 9.0 3365 1150 205	mV/°C mΩ S pF pF pF
$\begin{array}{c c} \Delta V_{GS(th)} & G \\ \hline \Delta T_J & T \\ \hline DS(on) & S \\ \hline \hline SS(on) & S \\ $	Temperature Coefficient Static Drain to Source On Resistance Forward Transconductance haracteristics Input Capacitance Output Capacitance Reverse Transfer Capacitance Gate Resistance Characteristics Turn-On Delay Time Rise Time	$V_{GS} = 4.5 \text{ V}, \text{ I}_{D} = 15 \text{ A}$ $V_{GS} = 2.5 \text{ V}, \text{ I}_{D} = 12 \text{ A}$ $V_{GS} = 4.5 \text{ V}, \text{ I}_{D} = 15 \text{ A}, \text{ T}_{J} = 125 \text{ °C}$ $V_{DD} = 5 \text{ V}, \text{ I}_{D} = 15 \text{ A}$ $V_{DS} = 15 \text{ V}, \text{ V}_{GS} = 0 \text{ V},$ $f = 1 \text{ MHz}$ $V_{DD} = 15 \text{ V}, \text{ I}_{D} = 15 \text{ A},$		4.3 6.2 6.3 91 2530 865 140 0.8	9.3 9.0 3365 1150 205	mΩ S pF pF
$\begin{array}{c c} \hline D_{FS} & F \\ \hline Dynamic CI \\ \hline D_{iss} & I \\ \hline D_{ciss} & G \\ \hline D_{rss} & G \\ \hline D_{rss} & F \\ \hline R_g & G \\ \hline \hline Switching G \\ \hline Switching G \\ \hline G \\ \hline Switching G \\ \hline $	Forward Transconductance haracteristics Input Capacitance Output Capacitance Reverse Transfer Capacitance Gate Resistance Characteristics Turn-On Delay Time Rise Time	$V_{GS} = 2.5 \text{ V}, I_D = 12 \text{ A}$ $V_{GS} = 4.5 \text{ V}, I_D = 15 \text{ A}, T_J = 125 \text{ °C}$ $V_{DD} = 5 \text{ V}, I_D = 15 \text{ A}$ $V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V},$ $f = 1 \text{ MHz}$ $V_{DD} = 15 \text{ V}, I_D = 15 \text{ A},$		6.2 6.3 91 2530 865 140 0.8	9.3 9.0 3365 1150 205	PF pF pF
$\begin{array}{c c} \hline D_{FS} & F \\ \hline Dynamic CI \\ \hline D_{iss} & I \\ \hline D_{ciss} & G \\ \hline D_{rss} & G \\ \hline D_{rss} & F \\ \hline R_g & G \\ \hline \hline Switching G \\ \hline Switching G \\ \hline G \\ \hline Switching G \\ \hline $	Forward Transconductance haracteristics Input Capacitance Output Capacitance Reverse Transfer Capacitance Gate Resistance Characteristics Turn-On Delay Time Rise Time	$V_{GS} = 2.5 \text{ V}, I_D = 12 \text{ A}$ $V_{GS} = 4.5 \text{ V}, I_D = 15 \text{ A}, T_J = 125 \text{ °C}$ $V_{DD} = 5 \text{ V}, I_D = 15 \text{ A}$ $V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V},$ $f = 1 \text{ MHz}$ $V_{DD} = 15 \text{ V}, I_D = 15 \text{ A},$		6.3 91 2530 865 140 0.8	9.0 3365 1150 205	PF pF pF
$ \begin{array}{c c} \hline PFS & F \\ \hline \hline Dynamic Cl \\ \hline C_{iss} & I \\ \hline C_{oss} & C \\ \hline C_{rss} & F \\ \hline R_g & C \\ \hline \hline Switching C \\ \hline Switching C \\ \hline d(on) & T \\ \hline f \\ \hline A_{g(TOT)} & T \\ \hline A_{gg} & T \\ \hline A_{gd} & C \\ \hline \hline Drain-Source \\ \hline \end{array} $	haracteristics Input Capacitance Output Capacitance Reverse Transfer Capacitance Gate Resistance Characteristics Turn-On Delay Time Rise Time	$V_{GS} = 4.5 \text{ V}, I_D = 15 \text{ A}, T_J = 125 \text{ °C}$ $V_{DD} = 5 \text{ V}, I_D = 15 \text{ A}$ $V_{DS} = 15 \text{ V}, V_{GS} = 0 \text{ V},$ $f = 1 \text{ MHz}$ $V_{DD} = 15 \text{ V}, I_D = 15 \text{ A},$		91 2530 865 140 0.8	3365 1150 205	pF pF pF
Dynamic Cl C_{iss} I C_{oss} Crss Rg Coss Crss Rg Coss Coss </td <td>haracteristics Input Capacitance Output Capacitance Reverse Transfer Capacitance Gate Resistance Characteristics Turn-On Delay Time Rise Time</td> <td>$V_{DD} = 5 \text{ V}, \text{ I}_{D} = 15 \text{ A}$ $V_{DS} = 15 \text{ V}, \text{ V}_{GS} = 0 \text{ V},$ f = 1 MHz $V_{DD} = 15 \text{ V}, \text{ I}_{D} = 15 \text{ A},$</td> <td></td> <td>2530 865 140 0.8</td> <td>1150 205</td> <td>pF pF pF</td>	haracteristics Input Capacitance Output Capacitance Reverse Transfer Capacitance Gate Resistance Characteristics Turn-On Delay Time Rise Time	$V_{DD} = 5 \text{ V}, \text{ I}_{D} = 15 \text{ A}$ $V_{DS} = 15 \text{ V}, \text{ V}_{GS} = 0 \text{ V},$ f = 1 MHz $V_{DD} = 15 \text{ V}, \text{ I}_{D} = 15 \text{ A},$		2530 865 140 0.8	1150 205	pF pF pF
$\begin{array}{c c} \hline C_{iss} & I \\ \hline C_{oss} & C \\ \hline C_{rss} & F \\ \hline R_g & C \\ \hline Switching C \\ \hline Switching C \\ \hline Switching C \\ \hline G(on) & 1 \\ \hline r & F \\ \hline G(off) & 1 \\ \hline r & F \\ \hline Q_{g(TOT)} & 1 \\ \hline Q_{gs} & 1 \\ \hline Q_{gd} & C \\ \hline Drain-Source \\ \hline \end{array}$	Input Capacitance Output Capacitance Reverse Transfer Capacitance Gate Resistance Characteristics Turn-On Delay Time Rise Time	f = 1 MHz V _{DD} = 15 V, I _D = 15 A,		865 140 0.8	1150 205	pF pF
$\begin{array}{c c} \hline C_{iss} & I \\ \hline C_{oss} & C \\ \hline C_{rss} & F \\ \hline R_g & C \\ \hline Switching C \\ \hline Switching C \\ \hline Switching C \\ \hline G(on) & 1 \\ \hline r & F \\ \hline G(off) & 1 \\ \hline r & F \\ \hline Q_{g(TOT)} & 1 \\ \hline Q_{gs} & 1 \\ \hline Q_{gd} & C \\ \hline Drain-Source \\ \hline \end{array}$	Input Capacitance Output Capacitance Reverse Transfer Capacitance Gate Resistance Characteristics Turn-On Delay Time Rise Time	f = 1 MHz V _{DD} = 15 V, I _D = 15 A,		865 140 0.8	1150 205	pF pF
$\begin{array}{c c} C_{oss} & C\\ C_{rss} & F\\ R_g & C\\ \hline \\ $	Output Capacitance Reverse Transfer Capacitance Gate Resistance Characteristics Turn-On Delay Time Rise Time	f = 1 MHz V _{DD} = 15 V, I _D = 15 A,		865 140 0.8	1150 205	pF pF
C_{rss} F R_g (Switching C Switching C d(on) 7 r F d(off) 7 f F $Q_{g(TOT)}$ 7 Q_{gs} 7 Q_{gd} (Drain-Source	Reverse Transfer Capacitance Gate Resistance Characteristics Turn-On Delay Time Rise Time	V _{DD} = 15 V, I _D = 15 A,		140 0.8	205	pF
$\begin{array}{c c} \hline & & & \\ \hline \hline & & \\ \hline \hline & & \\ \hline & & \\ \hline \hline & & \\ \hline \hline \\ \hline & & \\ \hline \hline \\ \hline & & \\ \hline \hline \hline \\ \hline \hline \hline \\ \hline \hline \\ \hline \hline \\ \hline \hline \hline \\ \hline \hline \hline \\ \hline \hline \hline \hline \hline \\ \hline \hline$	Gate Resistance Characteristics Turn-On Delay Time Rise Time			0.8		
Switching C d(on) 7 r 6 d(off) 7 f 7 $Q_{g(TOT)}$ 7 Q_{gs} 7 Q_{gd} 7 Drain-Source	Characteristics Turn-On Delay Time Rise Time				21	
d(on) 1 r F d(off) 1 f F $\lambda_{g(TOT)}$ 1 λ_{gs} 1 λ_{gd} C Drain-Source	Turn-On Delay Time Rise Time			18	21	-
r r r r r r r r r r	Rise Time			18	21	
$d_{(off)}$ 1 f F $Q_{g(TOT)}$ 1 Q_{gs} 1 Q_{gd} (C) Drain-Source					51	ns
f F $Q_{g(TOT)}$ 7 Q_{gs} 7 Q_{gd} 7 Drain-Source	Turn Off Dolou Timo			9	18	ns
f F F $\lambda_{g(TOT)}$ 1 λ_{gs} 1 λ_{gd} C		V_{GS} = 4.5 V, R_{GEN} = 6 Ω		35	56	ns
ຊ _{gs} 1 ຊ _{gd} (Drain-Sourc	Fall Time			6	12	ns
ຊ _{gs} 1 ຊ _{gd} (Drain-Sourc	Total Gate Charge at 4.5 V			19.4	27.2	nC
ସ _{ୁଗ} ା (Drain-Sourc	Total Gate Charge	V _{DD} = 15 V, I _D = 15 A		4.8		nC
Drain-Sour	Gate to Drain "Miller" Charge			4.2		nC
	ce Diode Characteristics					
V _{SD}		$V_{GS} = 0 V, I_{S} = 15 A$ (Note 2)		0.8	1.3	1
	Source to Drain Diode Forward Voltage	$V_{GS} = 0 V, I_S = 1.7 A$ (Note 2)		0.0	1.2	V
				35	55	200
	Reverse Recovery Time	— I _F = 15 A, di/dt = 100 A/μs				ns
Q _{rr} F NOTES:	Reverse Recovery Charge			17	30	nC
. R _{0JA} is determine the user's board o	ed with the device mounted on a 1in ² pad 2 oz copper pa design.	ad on a 1.5 x 1.5 in. board of FR-4 material. $R_{ ext{ heta}JC}$ is gu	aranteed b	y design while	e R _{θCA} is de	termined b
	a. 53 °C/W when mou 1 in ² pad of 2 oz co			when moun n pad of 2 oz o		
2. Pulse Test: Pulse 3. Starting $T_J = 25^{\circ}$	e Width < 300 μs, Duty cycle < 2.0%.	ι.				

Electrical Characteristics $T_J = 25$ °C unless otherwise noted

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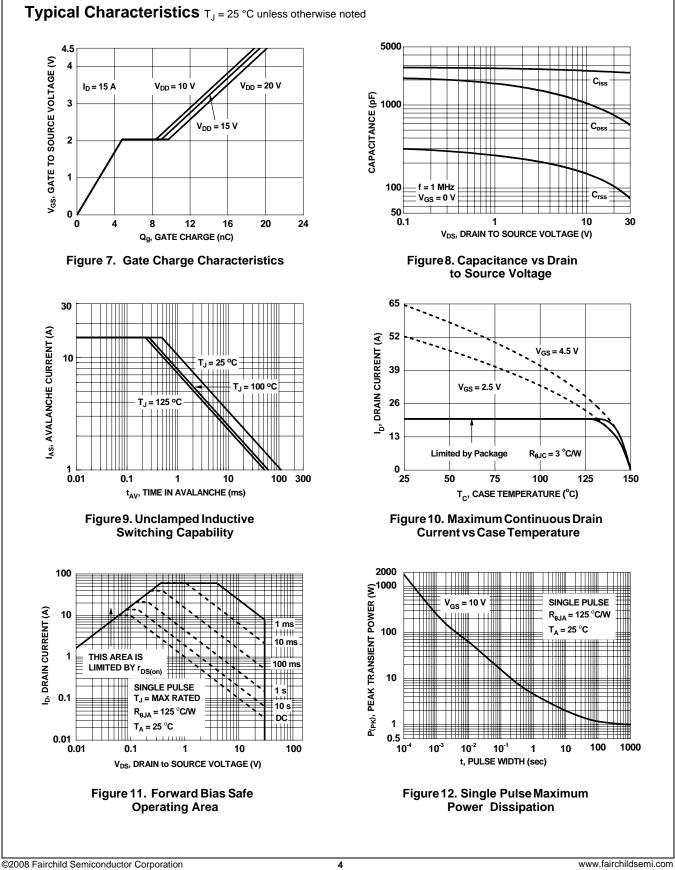
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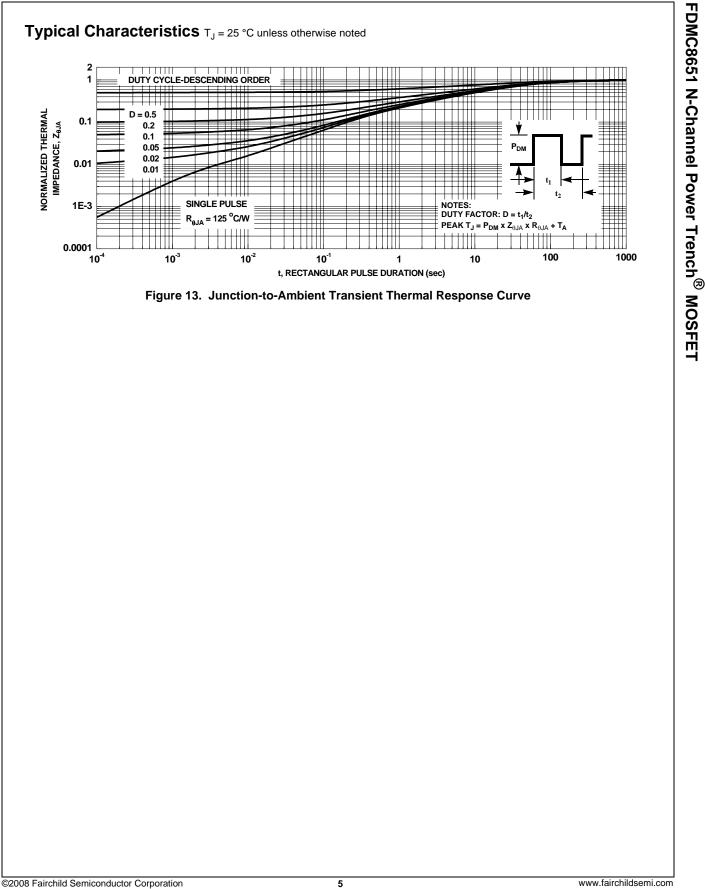
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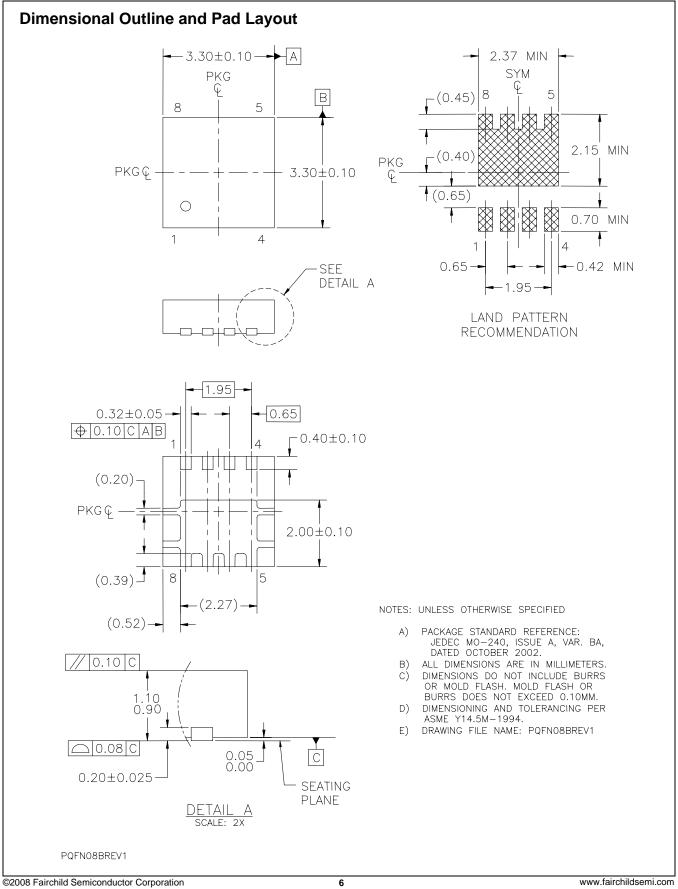


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