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FDD3690

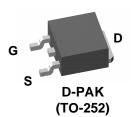
100V N-Channel PowerTrench[®] MOSFET

General Description

This N-Channel MOSFET has been designed specifically to improve the overall efficiency of DC/DC converters using either synchronous or conventional switching PWM controllers.

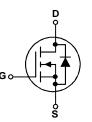
These MOSFETs feature faster switching and lower gate charge than other MOSFETs with comparable $\mathsf{R}_{\mathsf{DS}(\mathsf{ON})}$ specifications.

The result is a MOSFET that is easy and safer to drive (even at very high frequencies), and DC/DC power supply designs with higher overall efficiency.



Features

- 22 A, 100 V. $R_{DS(ON)} = 64 \text{ m}\Omega @ V_{GS} = 10 \text{ V}$ $R_{DS(ON)} = 71 \text{ m}\Omega @ V_{GS} = 6 \text{ V}$
- Low gate charge (28nC typical)
- Fast Switching
- High performance trench technology for extremely low $R_{\text{DS}(\text{ON})}$
- High power and current handling capability



Absolute Maximum Ratings T_{A=25°C} unless otherwise noted

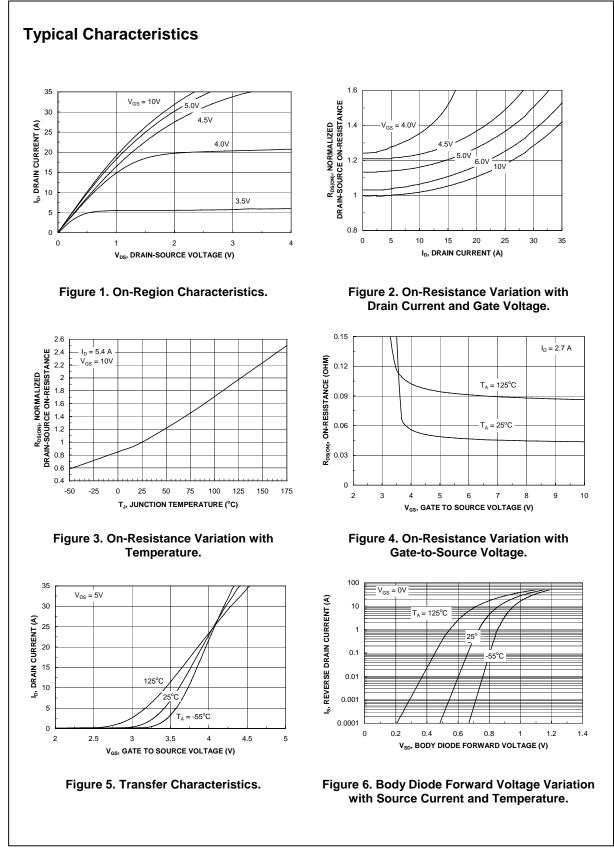
Symbol	Parameter			Ratings	Units	
V _{DSS}	Drain-Source Voltage	Drain-Source Voltage		100	V	
V _{GSS}	Gate-Source Voltage			±20	V	
ID	Continuous Drain Cur	Continuous Drain Current @T _C =25°C (Note 3)			А	
		Pulsed	(Note 1a)	75		
PD	Power Dissipation	@T _c =25°C	(Note 3)	60	W	
		@T _A =25°C	(Note 1a)	3.8		
		@T _A =25°C	(Note 1b)	1.6		
T _J , T _{STG}	Operating and Storag	e Junction Tempera	ature Range	-55 to +175	°C	
Therma	I Characteristic	cs				
$R_{\theta JC}$	Thermal Resistance, Junction-to-Cas		(Note 1)	2.5	°C/W	
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Not		(Note 1a)	40	°C/W	
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 1b)		(Note 1b)	96 °C		
Packag	e Marking and	Ordering Inf	ormation			
Device N		V	el Size	Tape width	Quantity	
FDD3	3690 FDD	3690	13"	16mm	2500 units	

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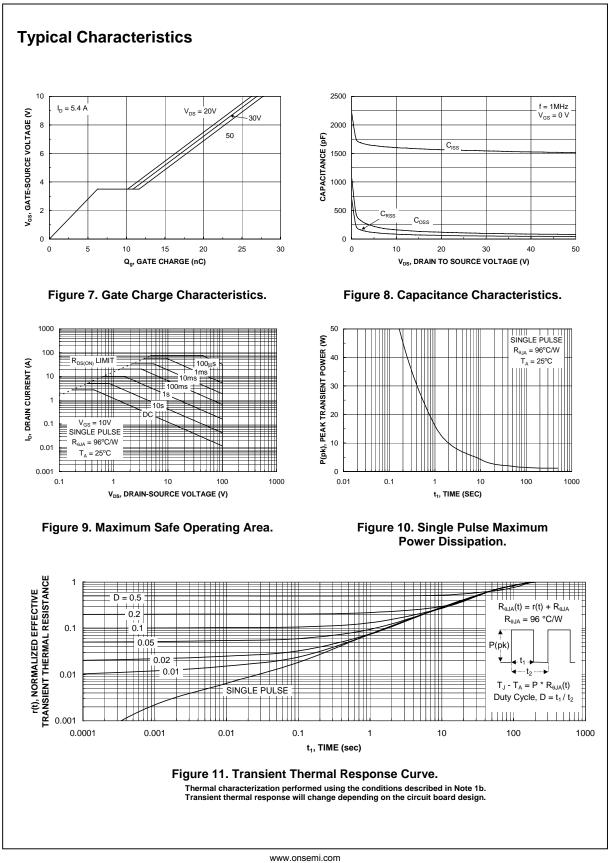
Publication Order Number: FDD3690/D

Drain-Source Avalanche Ratings (Note 2) Woss Ningle Pulse Drain-Source Vos = 50 V. In = 5.4 Å 17.5 mJ Are Maximum Drain-Source Avalanche Source Avalanche 100 V V BYoss Drain-Source Breakdown Voltage Vos = 0 V. In = 250 µA. 100 V BYoss Drain-Source Breakdown Voltage Vos = 0 V. In = 250 µA. 100 V Byoss Drain-Source Breakdown Voltage Vos = 20 µA. Referenced to 25° C 78 mV/r0 Arge Current Vos = 20 µA. Referenced to 25° C 78 mV/r0 Operations Gate Threshold Voltage Vos = 20 µA. Vos = 0 V 100 nA Outcom Gate Threshold Voltage Vos = 20 µA. Vos = 0 V -100 nA Order Gate Threshold Voltage Vos = 6 V. In = 5.4 A Vos = 0 V -100 nA Outcom Gate Threshold Voltage Vos = 6 V. In = 5.4 A 20 A 71 Maskinue Coefficient Vos = 6 V. In = 5.4 A 20 A 71 71 <t< th=""><th>Symbol</th><th>Parameter</th><th>Test Conditions</th><th>Min</th><th>Тур</th><th>Max</th><th>Units</th></t<>	Symbol	Parameter	Test Conditions	Min	Тур	Max	Units
Woss Single Pulse Drain-Source V ₂₀ = 50 V, I ₀ = 5.4 A 175 mJ J _{AR} Maximum Drain-Source Avalanche 5.4 A Off Characteristics Summer Source Breakdown Voltage V ₀₀ = 0 V, I ₀ = 250 µA 100 V BV ₀₀₅ Drain-Source Breakdown Voltage V ₀₀ = 0 V, I ₀ = 250 µA, Referenced to 25°C 78 mV/°C Coefficient V ₀₀₅ = 0 V, V ₀₀₅ = 0 V 100 A Iggst Gate Abody Leakage, Forward V ₀₅ = -20 V, V ₀₅ = 0 V 100 A Iggst Gate Threshold Voltage V ₀₅ = -20 V, V ₀₅ = 0 V -100 A Voltage V ₀₅ = -20 V, V ₀₅ = 0 V -100 A Iggst Gate Threshold Voltage V ₀₅ = -20 V, V ₀₅ = 0 V -000 A Voltage V ₀₅ = 0 V, Ip = 5.4 A V ₀₅ = 0 V -6.2 mV/°C AT_1 Temperature Coefficient Ip = 5.2 A 47 71 mu Voltage Temperature Coefficient V ₀₅ = 50 V,	-	burce Avalanche Ratings (Not	l e 2)	1			
Image Maximum Drain-Source Avalanche 5.4 A Off Characteristics BV _{O36} Drain-Source Breakdown Voltage V _{O5} = 0 V, I _D = 250 µA, Referenced to 25°C 78 m/V/C ABVoss Breakdown Voltage Temperature Ib = 250 µA, Referenced to 25°C 78 m/V/C Iosa Zero Gate Voltage Drain Current V _{O8} = 0 V, V _{O8} = 0 V 100 µA Iquess Gate-Body Leakage, Forward V _{O8} = 20 V, V _{O8} = 0 V 100 µA Iquess Gate-Body Leakage, Reverse V _{O8} = 0.20 V, V _{O8} = 0 V 100 µA Iquess Gate Threshold Voltage V _{O8} = 0.20 V, V _{O8} = 0 V -1000 µA Masse Gate Threshold Voltage V _{O8} = 0.20 V, V _{O8} = 0 V 2 2.4 4 V Masse Gate Threshold Voltage V _{O8} = 10 V, I _D = 5.4 A 2 2.4 4 M Masse Gate Threshold Voltage V _{O8} = 10 V, I _D = 5.4 A, T ₁ = 125°C 88 135 1000° N 20 A 35 1000° A 35 100° 20 S		Single Pulse Drain-Source				175	mJ
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	I _{AR}	Maximum Drain-Source Avalanche				5.4	A
BV _{DSS} Drain–Source Breakdown Voltage V _{os} = 0 V, I _o = 250 μA 100 V ΔBV _{DSS} Breakdown Voltage Temperature I _o = 250 μA, Referenced to 25°C 78 mV/*0 Δgss Zero Gate Voltage Drain Current V _{DS} = 80 V, V _{OS} = 0 V 10 μA Loss Gate–Body Leakage, Forward V _{SS} = 20 V, V _{OS} = 0 V 100 nA Loss Gate–Body Leakage, Forward V _{SS} = 20 V, V _{OS} = 0 V 100 nA Mostion Gate–Body Leakage, Forward V _{SS} = 20 V, V _{OS} = 0 V 100 nA Mostion Gate Gate-Body Leakage, Forward V _{SS} = 20 V, V _{OS} = 0 V 100 nA Mostion Gate Threshold Voltage V _{DS} = V _{OS} + 10 = 250 μA 2 2.4 4 V Massing Gate Threshold Voltage Io = 250 μA, Referenced to 25°C -6.2 mV/*0 -7 -7 mV/*0 Alg Jo = 10 V, Io = 5.4 A, T _J = 125°C 47 71 mV/*0 -7 135 -7 -7 88 135 -7 -7 -7 151	Off Char	acteristics		L			
ΔBVoss ΔT_ Breakdown Voltage Temperature Coefficient I _b = 250 µA, Referenced to 25°C 78 mV/40 Juss Coefficient Vos 80 V, Vos 0 10 µA Juss Gate-Body Leakage, Forward Vos 80 V, Vos 0 100 µA Juss Gate-Body Leakage, Forward Vos 20 V, Vos 0 100 µA Vos Qas O Vos 0 100 µA Vos Vos Vos Vos 0 100 µA Vos Vos Vos Vos Vos 0 100 µA Vos Gate Threshold Voltage Vos Vos 10 2 2.4 4 V Vos 10 Vos 10 2.5.4.A 44 46 47 71 mΩ Mos 10.1 Vos 5.4.A 1.2 2.0 A 88 135 100 20 S <t< td=""><td></td><td></td><td>$V_{GS} = 0 V$, $I_D = 250 \mu A$</td><td>100</td><td></td><td></td><td>V</td></t<>			$V_{GS} = 0 V$, $I_D = 250 \mu A$	100			V
ΔT _μ Coefficient Image of the set of th		•			78		mV/°C
lassr Gate-Body Leakage, Forward $V_{GS} = 20$ V, $V_{DS} = 0$ V Image: Constraint of the state o	ΔT_{J}						
Issak Gate-Body Leakage, Reverse V _{GS} = -20 V V _{DS} = 0 V -100 nA On Characteristics (Note 2) Vosimi Gate Threshold Voltage V _{DS} = V _{DS} , Ip = 250 µA 2 2.4 4 V MVGSIMI Gate Threshold Voltage Ip = 250 µA, Referenced to 25°C -6.2 mV/r0 AT_ Temperature Coefficient Ip = 25.0 µA, Referenced to 25°C -6.2 mV/r0 Ros(on) Static Drain-Source Vos = 10 V, Ip = 5.4 A, TJ = 125°C 47 71 More On-Resistance Vos = 10 V, Ip = 5.4 A, TJ = 125°C 48 135 Incerv Vos = 10 V, Ip = 5.4 A, TJ = 125°C 88 135 Support Characteristics Vos = 5 V, Ip = 5.4 A 20 A Grs Input Capacitance VDs = 5 V, Ip = 5.4 A 20 A Grs Num-On Delay Time VDs = 50 V, Vos = 0 V, Ip = 1 A, It 1 20 ns Static Drain Characteristics Note 2) Infu = 00 ns Infu = 00 ns Gate Turn-On Delay Time VDs = 50 V, Ig = 1 A, Vos = 10 V, Rgen = 6 Ω Is = 00 Is = 00 Is = 00 <td>I_{DSS}</td> <td>-</td> <td></td> <td></td> <td></td> <td>-</td> <td></td>	I _{DSS}	-				-	
On Characteristics (Note 2) VGS(m) Gate Threshold Voltage $V_{DS} = V_{DS}$, $I_D = 250 \mu A$ 2 2.4 4 V $\Delta V_{GS(m)}$ Gate Threshold Voltage $I_D = 250 \mu A$, Referenced to 25°C -6.2 mV/PC ΔT_J Temperature Coefficient $I_D = 5.4 A$ 44 64 mV/PC $Br(s)$ Static Drain Source $V_{GS} = 10 V$, $I_D = 5.4 A$, $T_J = 125°C$ 88 135 $I_D(em)$ On-State Drain Current $V_{GS} = 10 V$, $V_{DS} = 5 V$ 20 A grs Forward Transconductance $V_{DS} = 5 V$, $I_D = 5.4 A$ 20 S Dynamic Characteristics $V_{DS} = 50 V$, $V_{DS} = 50 V$, $I_D = 5.4 A$ 20 S Dynamic Characteristics I_{44} pF Switching Characteristics (Note 2) I_{44} pF $V_{DS} = 50 V$, $I_D = 1A$, $V_{CS} = 0 V$, $I_D = 1A$, I_T <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>							
Vasimi Vasimi QuestionGate Threshold Voltage Threshold Voltage AT_JVDS Fermerature CoefficientVDS LD LD LD LDVDS LD LD LDVDS 	GSSR	Gate–Body Leakage, Reverse	$V_{GS} = -20 \text{ V} \qquad V_{DS} = 0 \text{ V}$			-100	nA
		acteristics (Note 2)	1		1	1	1
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		5		2		4	
VGB = 10 V, ID = 5.4 A, TJ = 125°C88135Indem)On-State Drain CurrentVGB = 10 V, VGB = 5 V20AgrsForward TransconductanceVDB = 5 V, ID = 5.4 A20SDynamic CharacteristicsConstanceVDB = 50 V, VGB = 0 V, ID = 5.4 A20SOutput CapacitanceVDB = 50 V, VGB = 0 V, ID = 5.4 A20SDynamic CharacteristicsOutput CapacitanceVDB = 50 V, VGB = 0 V, ID HHZSwitching Characteristics (Note 2)Turm-On Delay Timeta(on)Turm-On Delay TimeVDD = 50 V, ID = 1 A,1120nsta(on)Turm-Off Belay TimeVGB = 10 V, RGEN = 6 Ω6.515nsta(eff)Turm-Off Fall TimeVGB = 50 V, ID = 5.4 A,2839nCQgTotal Gate ChargeVDB = 50 V, ID = 5.4 A,2839nCQgaGate-Source ChargeVGB = 10 V6.2nCQgaGate-Drain ChargeVGB = 10 V6.2nCDgadGate-Drain ChargeVGB = 0 V, ID = 5.4 A,200.731.2VsbDrain-Source Diode Characteristics and Maximum RatingsIsMaximum Continuous Drain-Source Diode Forward Current3.2AVsbDrain-Source Diode Forward VoltageVGB = 0 V, ID = 3.2 A(Note 2)0.731.2VsbDrain-Source Diode Forward VoltageVGB = 0 V, ID = 3.2 ANote 2)0.73 </td <td></td> <td>5</td> <td>·</td> <td></td> <td>-6.2</td> <td></td> <td>mV/°C</td>		5	·		-6.2		mV/°C
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$\begin{array}{c c c c c c c c c c c c c c c c c c c $		On-Resistance					
g_{FS} Forward Transconductance $V_{DS} = 5 V$, $I_D = 5.4 A$ 20SDynamic Characteristics C_{ISS} Input Capacitance $V_{DS} = 50 V$, $V_{GS} = 0 V$, $I = 1.0 MHz$ $I = 1.0 MHz$ $B22$ pF C_{OSS} Output Capacitance $f = 1.0 MHz$ $B22$ pF $B22$ pF C_{ISS} Reverse Transfer Capacitance $V_{DD} = 50 V$, $I_D = 1 A$, $I = 1.0 MHz$ $B22$ pF Switching Characteristics (Note 2) $V_{CS} = 10 V$, $R_{GEN} = 6 \Omega$ $I = 1.0 MHz$ $I = 29$ $I = 0.5 M$ I_{cont} Turn-On Delay Time $V_{DS} = 50 V$, $I_D = 1 A$, $I = 29$ $I = 0.5 M$ $I = 29$ $I = 0.5 M$ I_{cont} Turn-Off Delay Time $V_{DS} = 50 V$, $I_D = 5.4 A$, $I = 28$ $I = 0.5 M$ $I = 29$ $I = 0.5 M$ I_{adm} Turn-Off Fall Time $I = 0.0 M$ Q_g Total Gate Charge $V_{DS} = 50 V$, $I_D = 5.4 A$, $I = 0.0 M$ $I = 0.0 M$ $I = 0.0 M$ $I = 0.0 M$ Q_g Gate-Drain Charge $V_{DS} = 10 V$ $I_D = 5.4 A$, $I = 0.0 M$ $I = 0.0 M$ $I = 0.0 M$ Q_{gd} Gate-Drain Charge $V_{DS} = 0 V$, $I_S = 3.2 A$ (Note 2) $I = 0.7 3$ $I = 0.0 M$ V_{SD} Drain-Source Diode Characteristics and Maximum Ratings I_S Maximum Continuous Drain-Source Diode Forward Voltage $V_{OS} = 0 V$, $I_S = 3.2 A$ (Note 2) $I = 0.7 3$ $I = 0.0 M$ V_{SD} Is the sum of the junction-to-case and case-to-ambleint thermal resistance where the ca	I _{D(on)}	On-State Drain Current		20			Α
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Ciss Input Capacitance $V_{DS} = 50 \text{ V}$, $V_{GS} = 0 \text{ V}$, $f = 1.0 \text{ MHz}$ 1514 pF Coss Output Capacitance $f = 1.0 \text{ MHz}$ 82 pF Switching Characteristics (note 2) 444 pF t_d(on) Turn-On Delay Time $V_{DD} = 50 \text{ V}$, $I_D = 1 \text{ A}$, $V_{GS} = 6 \Omega$ 6.5 155 ns t_d(on) Turn-On Rise Time $V_{OS} = 50 \text{ V}$, $R_{GEN} = 6 \Omega$ 6.5 15 ns t_d(on) Turn-Off Delay Time $V_{OS} = 50 \text{ V}$, $R_{GEN} = 6 \Omega$ 6.5 15 ns t_d(on) Turn-Off Fall Time $V_{OS} = 50 \text{ V}$, $R_{GEN} = 6 \Omega$ 6.2 nC Q_g Total Gate Charge $V_{OS} = 50 \text{ V}$, $I_D = 5.4 \text{ A}$, 28 39 nC 6.2 nC Q_{gd} Gate-Drain Charge $V_{OS} = 10 \text{ V}$ 6.2 nC D_{gd} Gate-Drain Charge $V_{SS} = 0 \text{ V}$, $I_S = 3.2 \text{ A}$ $(Note 2)$ $0.73 1.2$ V V_{SD} Drain-Source Diode Forward Voltage $V_{GS} = 0 \text{ V}$, $I_S = 3.2 \text{ A}$ $(Note 2)$ $0.73 1.2$ V N_{SD} Drain-Source Diode Forward Quite e user's board design. <td>Dynamic</td> <td>Characteristics</td> <td></td> <td></td> <td></td> <td></td> <td></td>	Dynamic	Characteristics					
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Cress Reverse Transfer Capacitance 44 pF Switching Characteristics (Note 2) t_d(m) Turn-On Delay Time VDD = 50 V, VDB = 6 Ω ID = 1 A, VDB = 6 Ω 11 20 ns t_r Turn-On Rise Time VDD = 50 V, RGEN = 6 Ω ID = 1 A, COM = 6.5 15 ns t_d(df) Turn-Off Delay Time VDB = 50 V, RGEN = 6 Ω 6.5 15 ns t_d(df) Turn-Off Fall Time VDB = 50 V, RGEN = 6 Ω ID = 5.4 A, COM = 28 29 60 ns Qg Total Gate Charge VDB = 50 V, RGEN = 6 Ω ID = 5.4 A, COM = 28 28 39 nC Qgs Gate-Drain Charge VDB = 50 V, RGEN = 6 Ω ID = 5.4 A, COM = 20 0.0 ns Drain-Source Diode Characteristics and Maximum Ratings IS Maximum Continuous Drain-Source Diode Forward Current 3.2 A Vsb Drain-Source Diode Forward Voltage VGB = 0 V, IS = 3.2 A Note 2) 0.73 1.2 V Maximum Continuous Drain-Source Diode Forward Voltage VGB = 0 V, IS = 3.2 A Note 2) 0.73 1.2 V Maximum Continuous Drain-Source Dio							<u> </u>
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td(on) Turn-On Delay Time $V_{DD} = 50 \text{ V}$, $I_D = 1 \text{ A}$, $V_{GS} = 10 \text{ V}$, $R_{GEN} = 6 \Omega$ 11 20 ns td(off) Turn-Off Delay Time V_{SS} = 10 \text{ V}, $R_{GEN} = 6 \Omega$ 6.5 15 ns t_d(off) Turn-Off Delay Time 10 20 ns t_t Turn-Off Fall Time 10 20 ns Q_g Total Gate Charge $V_{DS} = 50 \text{ V}$, $I_D = 5.4 \text{ A}$, $Q_{SS} = 10 \text{ V}$ 6.2 nC Q_{gd} Gate-Drain Charge $V_{GS} = 10 \text{ V}$ 6.2 nC D_{gd} Gate-Drain Charge $V_{GS} = 10 \text{ V}$ 6.2 nC D_{gd} Gate-Drain Charge $V_{GS} = 0 \text{ V}$, $I_S = 3.2 \text{ A}$ (Note 2) 0.73 1.2 V Is Maximum Continuous Drain-Source Diode Forward Current 3.2 A V_{SD} Drain-Source Diode Forward Voltage $V_{GS} = 0 \text{ V}$, $I_S = 3.2 \text{ A}$ (Note 2) 0.73 1.2 V Is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface the drain pins. $R_{B_{2G}}$ is guaranteed by design while $R_{B_{2A}} = 40^{\circ}C/W$ when mounted on a minimum pad. b) $R_{B_{2A}} = 96^{\circ}C/W$ when mounted on a mi		· · ·					
tr Turn-On Rise Time $V_{GS} = 10 \text{ V}$, $R_{GEN} = 6 \Omega$ 6.5 15 ns t_d(off) Turn-Off Delay Time 10 20 ns t_t Turn-Off Fall Time 10 20 ns Q_g Total Gate Charge $V_{DS} = 50 \text{ V}$, $I_D = 5.4 \text{ A}$, 28 39 nC Q_{gd} Gate-Source Charge $V_{GS} = 10 \text{ V}$ $I_D = 5.4 \text{ A}$, 28 39 nC Q_{gd} Gate-Drain Charge $V_{GS} = 10 \text{ V}$ $I_D = 5.4 \text{ A}$, 28 39 nC Q_{gd} Gate-Drain Charge $V_{GS} = 10 \text{ V}$ $I_D = 5.4 \text{ A}$, 28 39 nC Q_{gd} Gate-Drain Charge $V_{GS} = 10 \text{ V}$ $I_D = 5.4 \text{ A}$, 28 39 nC Drain-Source Diode Characteristics and Maximum Ratings I_S $Maximum$ Continuous Drain-Source Diode Forward Current 3.2 A N_{SD} $0.73 1.2 \text{ V}$ Nsb Drain-Source Diode Forward Voltage $V_{GS} = 0 \text{ V}$, $I_S = 3.2 \text{ A}$ (Note 2) $0.73 1.2 \text{ V}$ Image: R_{GA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case t			$V_{re} = 50 V$ $I_{re} = 1.4$		11	20	ns
Turn-Off Delay Time 29 60 ns t_{t} Turn-Off Fall Time 10 20 ns Q_{g} Total Gate Charge $V_{DS} = 50 \text{ V}$, $I_{D} = 5.4 \text{ A}$, 28 39 nC Q_{gd} Gate-Source Charge $V_{GS} = 10 \text{ V}$ 6.2 nC Q_{gd} Gate-Drain Charge $V_{GS} = 10 \text{ V}$ 6.2 nC Drain-Source Diode Characteristics and Maximum Ratings Is Maximum Continuous Drain-Source Diode Forward Current 3.2 A V_{SD} Drain-Source Diode Forward Voltage $V_{GS} = 0 \text{ V}$, $I_S = 3.2 \text{ A}$ (Note 2) 0.73 1.2 V the a) $R_{BJA} = 40^{\circ}$ C/W when mounted on a $1in^2$ pad of 2 oz copper b) $R_{BJA} = 96^{\circ}$ C/W when mounted on a minimum pad. Scale 1 : 1 on letter size paper b) $R_{BJA} = 96^{\circ}$ C/W when mounted on a minimum pad. Scale 1 : 1 on letter size paper			$V_{\text{DD}} = 30 \text{ V}, \qquad \text{ID} = 1 \text{ A}, \qquad V_{\text{GS}} = 10 \text{ V}, \qquad \text{R}_{\text{GEN}} = 6 \Omega$				
Image: Construct of the second se						-	-
Q_g Total Gate Charge $V_{DS} = 50 \text{ V},$ $I_D = 5.4 \text{ A},$ 28 39 nC Q_{gs} Gate-Source Charge $V_{GS} = 10 \text{ V}$ 6.2 nC Q_{gd} Gate-Drain Charge 5.4 nC Drain-Source Diode Characteristics and Maximum Ratings I_S Maximum Continuous Drain-Source Diode Forward Current 3.2 A V_{SD} Drain-Source Diode Forward Voltage $V_{GS} = 0 \text{ V},$ $I_S = 3.2 \text{ A}$ (Note 2) 0.73 1.2 V others: R_{gA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface the drain pins. R_{gJC} is guaranteed by design while R_{eCA} is determined by the user's board design. b) $R_{gJA} = 96^{\circ}C/W$ when mounted on a $1n^2$ pad of 2 oz copper case 1 : 1 on letter size paper Pulse Test: Pulse Width < 300 µs, Duty Cycle < 2.0%		,			10	20	ns
Q_{gs} Gate-Source Charge $V_{GS} = 10 \text{ V}$ 6.2 nC Q_{gd} Gate-Drain Charge $V_{GS} = 10 \text{ V}$ 6.2 nC Drain-Source Diode Characteristics and Maximum Ratings Is Maximum Continuous Drain-Source Diode Forward Current 3.2 A V_{SD} Drain-Source Diode Forward Voltage $V_{GS} = 0 \text{ V}$, $I_S = 3.2 \text{ A}$ (Note 2) 0.73 1.2 V othes: R_{gJA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface the drain pins. R_{gJA} is guaranteed by design while R_{gCA} is determined by the user's board design. b) $R_{gJA} = 96^{\circ}$ C/W when mounted on a $11n^2$ pad of 2 oz copper b) $R_{gJA} = 96^{\circ}$ C/W when mounted on a minimum pad. Scale 1 : 1 on letter size paper Pulse Test: Pulse Width < 300 µs, Duty Cycle < 2.0%		Total Gate Charge	$V_{DS} = 50 \text{ V}, \qquad I_D = 5.4 \text{ A},$				
Q _{gd} Gate-Drain Charge 5.4 nC Drain-Source Diode Characteristics and Maximum Ratings Is Maximum Continuous Drain-Source Diode Forward Current 3.2 A V _{SD} Drain-Source Diode Forward Voltage V _{GS} = 0 V, I _S = 3.2 A (Note 2) 0.73 1.2 V Otes: R _{8JA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface the drain pins. R _{8JC} is guaranteed by design while R _{8CA} is determined by the user's board design. b) R _{8JA} = 96°C/W when mounted on a 1in ² pad of 2 oz copper b) R _{8JA} = 96°C/W when mounted on a minimum pad. Scale 1 : 1 on letter size paper		-			6.2		nC
Is Maximum Continuous Drain–Source Diode Forward Current 3.2 A Vsb Drain–Source Diode Forward Voltage $V_{GS} = 0 V$, $I_S = 3.2 A$ (Note 2) 0.73 1.2 V Otes: R _{6JA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface the drain pins. R _{6JC} is guaranteed by design while R _{6CA} is determined by the user's board design. b) R _{8JA} = 96°C/W when mounted on a 1in ² pad of 2 oz copper b) R _{8JA} = 96°C/W when mounted on a minimum pad. Scale 1 : 1 on letter size paper		Gate–Drain Charge			5.4		nC
Is Maximum Continuous Drain–Source Diode Forward Current 3.2 A Vsb Drain–Source Diode Forward Voltage V _{GS} = 0 V, I _S = 3.2 A (Note 2) 0.73 1.2 V otes: R _{0JA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface the drain pins. R _{0JC} is guaranteed by design while R _{0CA} is determined by the user's board design. b) R _{0JA} = 96°C/W when mounted on a 1in ² pad of 2 oz copper b) R _{0JA} = 96°C/W when mounted on a minimum pad. Scale 1 : 1 on letter size paper	Drain_S	ource Diode Characteristics	and Maximum Ratings	1	1	1	1
Vsb Drain-Source Diode Forward Voltage V _{GS} = 0 V, I _S = 3.2 A (Note 2) 0.73 1.2 V otes: R_{eJA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface the drain pins. R_{eJC} is guaranteed by design while R_{eCA} is determined by the user's board design. b) $R_{aJA} = 96^{\circ}$ C/W when mounted on a 1 in ² pad of 2 oz copper b) $R_{aJA} = 96^{\circ}$ C/W when mounted on a minimum pad. Scale 1 : 1 on letter size paper						3.2	А
Pulse Test: Pulse Width < 300µs, Duty Cycle < 2.0%	-				0.73		
_ P _D	the drain pins.	R _{0JC} is guaranteed by design while R _{0CA} is deter a) R _{0JA} = 40°C/ 1in ² pad of 2 lse Width < 300 μ s, Duty Cycle < 2.0%	when mounted on a	b) R _{0J} A	(= 96°C/W	when mou	
Maximum current is calculated as: $\sqrt{R_{DS(ON)}}$ where P _D is maximum power dissipation at T _c = 25°C and R _{DS(ON)} is at T _{J(max)} and V _{GS} = 10V. Package current limitation is 21A	Maximum curr	rent is calculated as: $\sqrt{\frac{P_D}{R_{DS(ON)}}}$					

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