

## FDN359AN

General Description				Features				
This N using Power to min superio These battery loss an	I-Channel L Fairchild Trench proce himize on-sta or switching p devices are powered ap hd fast switch	ogic Level MOSF Semiconductor' ss that has been es ate resistance and berformance. e well suited for lo pplications where lo ing are required.	FET is produced s advanced specially tailored d yet maintain bw voltage and bw in-line power	<ul> <li>2.7 A, 30 V. R<sub>DS(ON)</sub> = 0.046 Ω @ V<sub>GS</sub> = 10 V R<sub>DS(ON)</sub> = 0.060 Ω @ V<sub>GS</sub> = 4.5 V.</li> <li>Very fast switching.</li> <li>Low gate charge (5nC typical).</li> <li>High power version of industry standard SOT-23 package. Identical pin out to SOT-23 with 30% higher power handling capability.</li> </ul>				
		888						
so	▲ DT-23	SuperSOT <sup>™</sup> -6	SuperSOT <sup>™</sup> -8	SO-8	SOT-223	SOIC-16		
		359A	2					
Absol	Supe ute Maxim	rSOT <sup>™</sup> -3 G	S = 25°C unless other wise r	noted	GSS			
Absol Symbol	Supe ute Maxim Parameter	rSOT <sup>™</sup> -3 G	S = 25°C unless other wise r	noted	G S	Units		
Absol Symbol V <sub>DSS</sub>	Supe ute Maxim Parameter Drain-Source	rSOT <sup>™</sup> -3 G	S = 25°C unless other wise r	noted	G S Ratings 30	Units V		
Absol Symbol V <sub>DSS</sub> V <sub>GSS</sub>	Supe	rsor™-3 G mum Ratings T <sub>A</sub> the Voltage	S = 25°C unless other wise r	noted	G S Ratings 30 ±20	Units V V		
Absol Symbol V <sub>DSS</sub> V <sub>GSS</sub> I <sub>D</sub>	Supe	rsor™-3 G rsor™-3 G num Ratings T <sub>A</sub> ce Voltage ce Voltage Drain Current - Continu	S = 25°C unless other wise r	noted	G         S           G         S           Ratings         30           ±20         2.7           45         45	Units           V           V           A		
Absol Symbol V <sub>DSS</sub> V <sub>GSS</sub> I <sub>D</sub>	Supe	T <sub>A</sub> TrSOT <sup>™</sup> -3 T <sub>A</sub> T <sub>A</sub>	S = 25°C unless other wise r uous (Note 1a) ed	noted	G         S           G         S           Ratings         30           ±20         2.7           15         5.5	Units           V           V           A		
Absol Symbol V <sub>DSS</sub> V <sub>GSS</sub> I <sub>D</sub> P <sub>D</sub>	Supe	rSOT <sup>™</sup> -3 G TA CE Voltage Drain Current - Continu - Pulse Power Dissipation	S = 25°C unless other wise r JOUS (Note 1a) ed (Note 1a)	noted	G         S           G         S           Ratings         30           ±20         2.7           15         0.5           0.5         115	Units Units V V A W		
Absol Symbol $V_{DSS}$ $V_{GSS}$ $I_D$ $P_D$	Supe	rSOT <sup>™</sup> -3 G TA TA TA TA TA TA TA TA TA TA	S = 25°C unless other wise r JOUS (Note 1a) ed (Note 1a) (Note 1b)	noted	G         S           G         S           Ratings         30           ±20         2.7           15         0.5           0.46         55 to 150	Units           V           V           A           W		
Absol Symbol V <sub>DSS</sub> V <sub>GSS</sub> I <sub>D</sub> P <sub>D</sub>	Supe	T <sub>A</sub> TSOT <sup>™</sup> -3 G TA CE Voltage Common Current - Continu - Pulse Power Dissipation and Storage Temperat	S = 25°C unless other wise r Jous (Note 1a) ed (Note 1a) (Note 1b) ture Range	noted	G       S         G       S         Ratings       S         30       20         2.7       15         0.5       0.46         -55 to 150       150	Units Units V V A W C C C		
Absol Symbol V <sub>DSS</sub> V <sub>GSS</sub> I <sub>D</sub> P <sub>D</sub> T <sub>J</sub> ,T <sub>STG</sub> THERMA	Supe	aum Ratings T <sub>A</sub> aum Ratings T <sub>A</sub> aum Ratings T <sub>A</sub> ace Voltage be Voltage Drain Current - Continu - Pulse Power Dissipation and Storage Temperat <b>FIRISTICS</b>	S = 25°C unless other wise r JOUS (Note 1a) ed (Note 1a) (Note 1b) ture Range		G       S         G       S         Ratings       30         ±20       2.7         15       0.5         0.46       -55 to 150         250       250	Units           V           V           A           W           °C		



## Product specification

## FDN359AN

TICS Durce Breakdown Voltage wn Voltage Temp. Coefficient te Voltage Drain Current ody Leakage, Forward ody Leakage, Reverse is (Note) reshold Voltage reshold Voltage Temp. Coefficient ain-Source On-Resistance	$V_{GS} = 0 \text{ V},        $	25 °C T <sub>J</sub> = 55°C	30	23	1 10 100 -100	V mV/°C μA μA nA
ource Breakdown Voltage wn Voltage Temp. Coefficient te Voltage Drain Current ody Leakage, Forward ody Leakage, Reverse S (Note) reshold Voltage reshold Voltage Temp. Coefficient ain-Source On-Resistance	$V_{GS} = 0 \text{ V},        $	25 °C T <sub>J</sub> = 55°C	30	23	1 10 100 -100	V mV/°C μA ηA nA
wn Voltage Temp. Coefficient te Voltage Drain Current ody Leakage, Forward ody Leakage, Reverse S (Note) reshold Voltage reshold Voltage Temp. Coefficient ain-Source On-Resistance	$I_{D} = 250 \ \mu\text{A}, \text{ Referenced to}$ $V_{DS} = 24 \ \text{V}, \ V_{GS} = 0 \ \text{V}$ $V_{GS} = 20 \ \text{V}, V_{DS} = 0 \ \text{V}$ $V_{GS} = -20 \ \text{V}, \ V_{DS} = 0 \ \text{V}$ $V_{DS} = V_{GS}, \ I_{D} = 250 \ \mu\text{A}$ $I_{D} = 250 \ \mu\text{A}, \text{ Referenced to}$ $V_{CS} = 10 \ \text{V}, \ I_{D} = 2.7 \ \text{A}$	25 °C T <sub>J</sub> = 55°C	1	23	1 10 100 -100	mV/°C μA μA nA nA
te Voltage Drain Current ody Leakage, Forward ody Leakage, Reverse <b>S</b> (Note) reshold Voltage reshold Voltage Temp. Coefficient ain-Source On-Resistance	$V_{DS} = 24 \text{ V}, V_{GS} = 0 \text{ V}$ $V_{GS} = 20 \text{ V}, V_{DS} = 0 \text{ V}$ $V_{GS} = -20 \text{ V}, V_{DS} = 0 \text{ V}$ $V_{DS} = V_{GS}, I_D = 250 \text{ µA}$ $I_D = 250 \text{ µA}, \text{ Referenced to}$ $V_{CS} = 10 \text{ V}, I_D = 2.7 \text{ A}$	T <sub>J</sub> = 55°C	1		1 10 100 -100	μA μA nA nA
ody Leakage, Forward ody Leakage, Reverse S (Note) reshold Voltage reshold Voltage Temp. Coefficient ain-Source On-Resistance	$V_{GS} = 20 \text{ V}, V_{DS} = 0 \text{ V}$ $V_{GS} = -20 \text{ V}, V_{DS} = 0 \text{ V}$ $V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$ $I_D = 250 \mu\text{A}, \text{ Referenced to}$ $V_{CS} = 10 \text{V}, I_D = 2.7 \text{A}$	T <sub>J</sub> = 55°C	1		10 100 -100	μA nA nA
ody Leakage, Forward ody Leakage, Reverse S (Note) reshold Voltage reshold Voltage Temp. Coefficient ain-Source On-Resistance	$V_{GS} = 20 \text{ V}, V_{DS} = 0 \text{ V}$ $V_{GS} = -20 \text{ V}, V_{DS} = 0 \text{ V}$ $V_{DS} = V_{GS}, I_D = 250 \text{ µA}$ $I_D = 250 \text{ µA}, \text{ Referenced to}$ $V_{CS} = 10 \text{ V}, I_D = 2.7 \text{ A}$		1		100 -100	nA nA
ody Leakage, Reverse S (Note) reshold Voltage reshold Voltage Temp. Coefficient ain-Source On-Resistance	$V_{DS} = V_{QS}, \ V_{DS} = 0 V$ $V_{DS} = V_{QS}, \ V_{D} = 250 \mu A$ $I_{D} = 250 \mu A, \text{ Referenced to}$ $V_{CS} = 10 V, \ I_{D} = 2.7 \text{ A}$		1		-100	nA
reshold Voltage reshold Voltage Temp. Coefficient ain-Source On-Resistance	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$ $I_D = 250 \mu\text{A}, \text{Referenced to}$ $V_{CS} = 10 \text{V}, I_D = 2.7 \text{A}$		1			
reshold Voltage reshold Voltage Temp. Coefficient ain-Source On-Resistance	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$ $I_D = 250 \mu\text{A}, \text{Referenced to}$ $V_{CS} = 10 \text{V}, I_D = 2.7 \text{A}$		1			
reshold Voltage Temp. Coefficient ain-Source On-Resistance	$I_D = 250 \ \mu\text{A}$ , Referenced to $V_{cs} = 10 \ \text{V}$ , $I_D = 2.7 \ \text{A}$			1.6	3	V
ain-Source On-Resistance	$V_{cs} = 10 \text{ V}, \text{ I}_{p} = 2.7 \text{ A}$	$I_{\rm s} = 250 \mu\text{A}$ . Referenced to $25 ^{\circ}\text{C}$		-4	-	mV/°C
	$V_{CS} = 10$ V, $I_D = 2.1$ A			0.037	0.046	, c
	$v_{GS} = 10 v, v_D = 2.7 A$	T_125°C		0.055	0.075	52
	V = 45V = 24A	1 <sub>J</sub> =125 C		0.000	0.075	-
Droin Curront	$V_{GS} = 4.5 \text{ V}, I_D = 2.4 \text{ A}$		15	0.049	0.00	٨
	$v_{GS} = 10$ v, $v_{DS} = 3$ v		15	0.5		~ ~
	$v_{\rm DS} = 3 v, \ i_{\rm D} = 2.7  {\rm A}$			9.0		5
						nE
	$v_{DS} = 10 \text{ V}, v_{GS} = 0 \text{ V},$ f = 1.0 MHz		400		pr pF	
	_			120		pr
				40		рг
TERISTICS (Note)					40	<u> </u>
	$V_{DD} = 5 V, I_D = 1 A,$ $V_{GS} = 4.5 V, R_{GEN} = 6 \Omega$			6	12	ns
				13	24	ns
it Delay Time				15	27	ns
if Fall Time				4	10	ns
te Charge	$V_{DS} = 10 \text{ V}, \text{ I}_{D} = 2.7 \text{ A},$ $V_{GS} = 5 \text{ V}$			5	7	nC
urce Charge				1.4		nC
ain Charge				1.6		nC
DE CHARACTERISTICS AND MA	XIMUM RATINGS		1	1		r —
Maximum Continuous Drain-Source Diode Forward Current					0.42	A
ource Diode Forward Voltage	$V_{GS} = 0 V, I_{S} = 0.42 A$ (Note	)		0.65	1.2	V
	ITAIISCONDUCTIVE IRISTICS IDENTICS IDENTICS IDENTICS IDENTICS INTERISTICS INT	Intersection $V_{DS} = 3.7$ , $V_{D} = 2.7$ A         Intersection       Image: Section of the section of	Image: Second declarice $V_{DS} = 3.7$ , $V_{D} = 2.7$ A         Image: Second declarice $V_{DS} = 10.7$ , $V_{GS} = 0.7$ , $f = 1.0$ MHz         Image: Second declarice $f = 1.0$ MHz         Image: Second declarice $V_{DS} = 10.7$ , $V_{GS} = 0.7$ , $f = 1.0$ MHz         Image: Second declarice $V_{DD} = 5.7$ , $I_D = 1.4$ , $V_{GS} = 4.5 V$ , $R_{GEN} = 6.\Omega$ Image: Second declarice $V_{DS} = 10.7$ , $R_{GEN} = 6.\Omega$ Image: Second declaric $V_{DS} = 10.7$ , $R_{GEN} = 6.\Omega$ Image: Second declaric $V_{DS} = 10.7$ , $R_{GEN} = 6.\Omega$ Image: Second declaric $V_{DS} = 10.7$ , $R_{GEN} = 6.\Omega$ Image: Second declaric $V_{DS} = 10.7$ , $R_{CEN} = 2.7$ A, $V_{GS} = 5.7$ Image: Second declaric $V_{DS} = 10.7$ , $R_{CEN} = 2.7$ A, $V_{GS} = 5.7$ Image: Second declaric $V_{DS} = 10.7$ , $I_D = 2.7$ A, $V_{GS} = 5.7$ Image: Second declaric $V_{DS} = 0.7$ , $I_D = 2.7$ A, $V_{GS} = 5.7$ Image: Second declaric $V_{GS} = 0.7$ , $I_S = 0.42$ A (Note)         Image: Second declaric $V_{GS} = 0.7$ , $I_S = 0.42$ A (Note)         Image: Second declaric $V_{GS} = 0.7$ , $I_S = 0.42$ A (Note)	Intersection $V_{DS} = 3 \text{ V},        $	Image: Solution doctance $V_{DS} = 3 \text{ V},        $	Transconductance $V_{DS} = 30$ V, $V_{DS} = 2.7$ A       3.3         stricts       stricts         spacitance $V_{DS} = 10$ V, $V_{GS} = 0$ V,       480         Capacitance       120         stransfer Capacitance       45         TERISTICS (Note)       45         m Delay Time $V_{DD} = 5$ V, $I_D = 1$ A,         m Rise Time $V_{GS} = 4.5$ V, $R_{GEN} = 6$ Ω         ff Delay Time       13         ff Fall Time       4         in Charge $V_{DS} = 10$ V, $I_D = 2.7$ A,         varee Charge $V_{GS} = 5$ V         ain Charge $V_{GS} = 5$ V         DE CHARACTERISTICS AND MAXIMUM RATINGS         m Continuous Drain-Source Diode Forward Current       0.42         purce Diode Forward Voltage $V_{GS} = 0$ V, $I_S = 0.42$ A (Note)       0.65       1.2