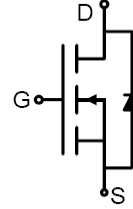


60V/80A N-Channel MOSFET
Features

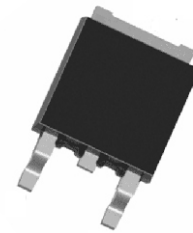
- 60V, 80A, $R_{DS(ON),max.} = 8m\Omega @ V_{GS}=10V$
- Reliable and Rugged
- Advanced trench process technology High Density Cell Design For Ultra Low On-Resistance


Application

- Battery protection
- Power management

Product Summary

V_{DS}	60V
$R_{DS(on),max@V_{GS}=10V}$	8m Ω
I_D	80A



TO-252

Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	60	V
Continuous drain current $T_C = 25^\circ\text{C}$ (Silicon limit) $T_C = 25^\circ\text{C}$ (Package limit) $T_C = 100^\circ\text{C}$ (Silicon limit)	I_D	- 80 47.5	A
Pulsed drain current $T_C = 25^\circ\text{C}$, t_p limited by T_{jmax}	$I_{D\ pulse}$	175	
Avalanche energy, single pulse ($L=0.5\text{mH}$, $R_g=25\Omega$)	E_{AS}	150	mJ
Gate-emitter voltage	V_{GS}	± 20	V
Power dissipation $T_C = 25^\circ\text{C}$	P_{tot}	115	W
Operating junction and storage temperature	T_j, T_{stg}	-55~175	$^\circ\text{C}$

Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal resistance, junction – case. Max	R_{thJC}	0.72	°C/W
Thermal resistance, junction – ambient. Max	R_{thJA}	40	

Electrical Characteristic, at $T_j = 25\text{ }^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	

Static Characteristic

Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60	-	-	V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$ $T_j=25^\circ C$ $T_j=125^\circ C$	2	3	4	
Zero gate voltage drain current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$ $T_j=25^\circ C$ $T_j=125^\circ C$	-	-	1 50	μA
Gate-source leakage current	I_{GSS}	$V_{GS}=20V, V_{DS}=0V$	-100	-	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=40A,$ $T_j=25^\circ C$	-	7	8	m Ω
Transconductance	g_{fs}	$V_{DS}=10V, I_D=40A$	-	100	-	S

Dynamic Characteristic

Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=25V,$ $f=1MHz$	-	3203	-	pF
Output Capacitance	C_{oss}		-	362	-	
Reverse Transfer Capacitance	C_{rss}		-	277	-	
Gate Total Charge	Q_G	$V_{GS}=10V, V_{DS}=55V,$ $I_D=40A, f=1MHz$	-	84	-	nC
Gate-Source charge	Q_{gs}		-	14	-	
Gate-Drain charge	Q_{gd}		-	30	-	
Turn-on delay time	$t_{d(on)}$	$T_j=25^\circ C, V_{DD}=34V,$ $I_{DS}=40A, R_L=3\Omega$	-	15	-	ns
Rise time	t_r		-	13	-	
Turn-off delay time	$t_{d(off)}$		-	20	-	
Fall time	t_f		-	8	-	
Gate resistance	R_G	$V_{GS}=0V, V_{DS}=0V,$ $f=1MHz$	-	1.8	-	Ω

Body Diode Characteristic

Maximum Continuous Drain to Source Diode Forward Current	I_S	-	-	80	A	
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}	-	-	175	A	
Drain to Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=40A$	-	0.8	1.0	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F=20A,$ $di/dt=100A/\mu s$	-	35	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	60	-	nC

Typical Performance Characteristics

Figure 1: Power Dissipation

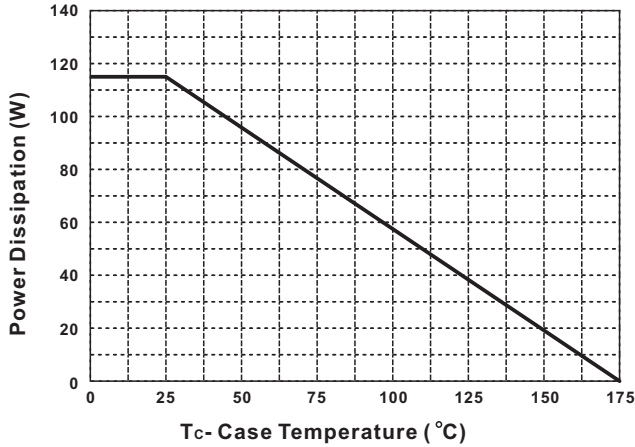


Figure 2: Drain Current

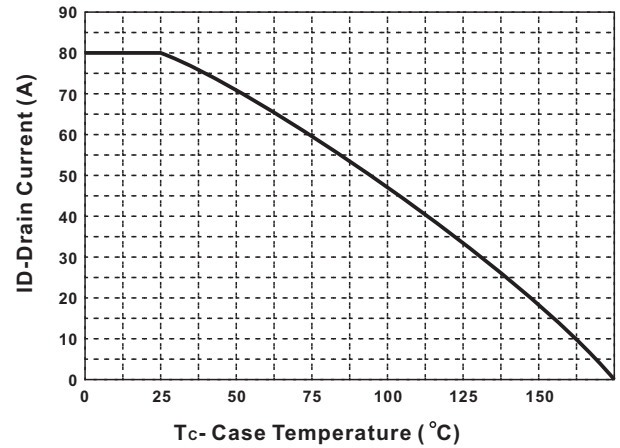


Figure 3: Safe Operation Area

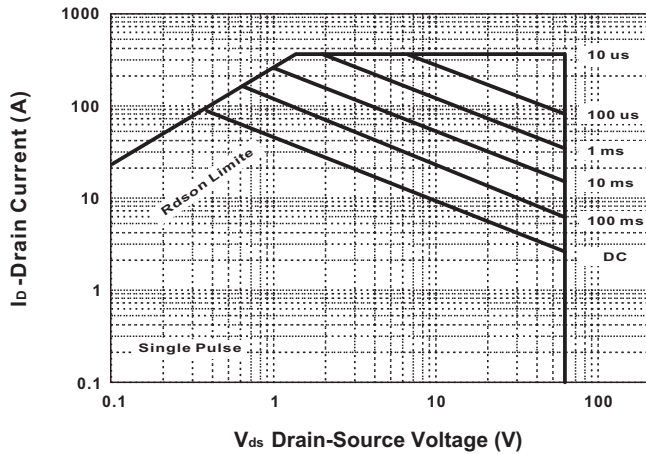


Figure 4: Typical Transfer Characteristics

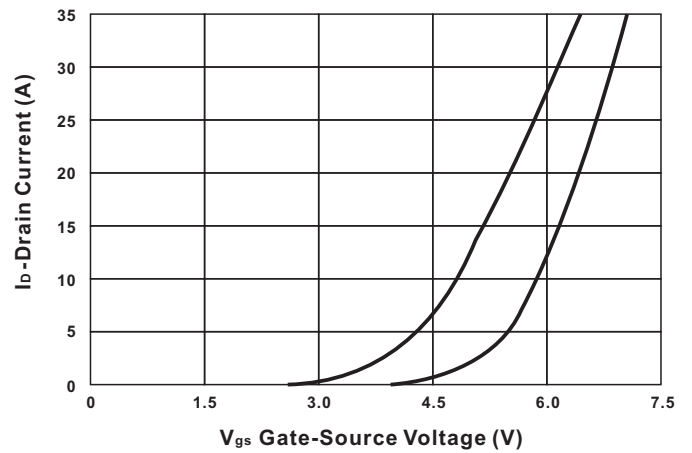


Figure 5: Thermal Transient Impedance

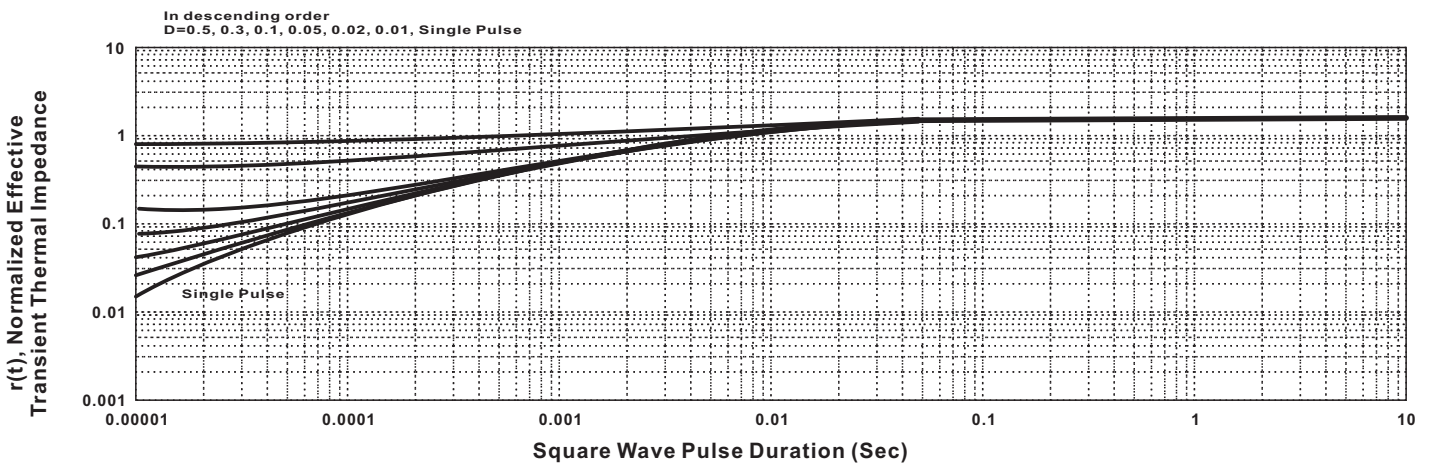


Figure 6: Output Characteristics

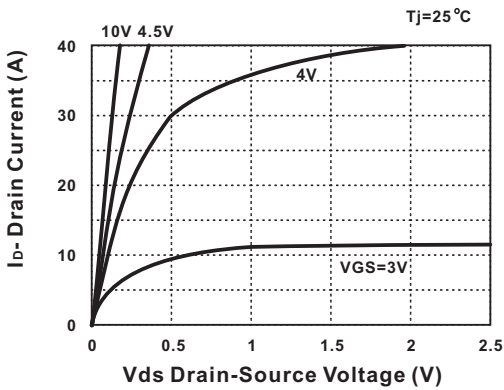


Figure 7: Drain-Source On Resistance

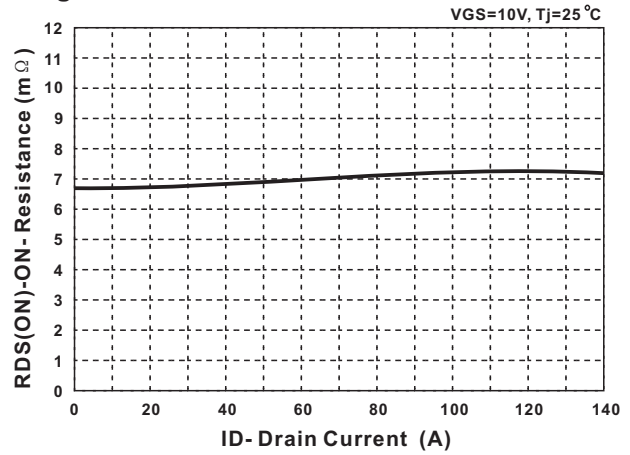


Figure 8: On-Resistance vs. Temperature

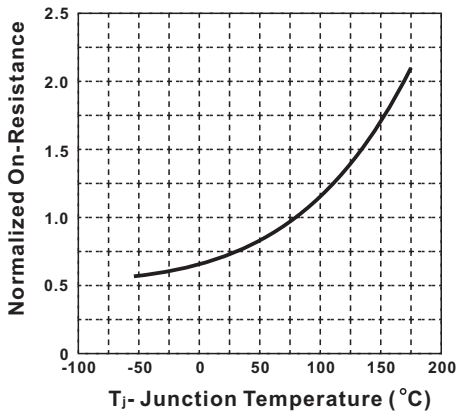


Figure 9: Source-Drain Diode Forward

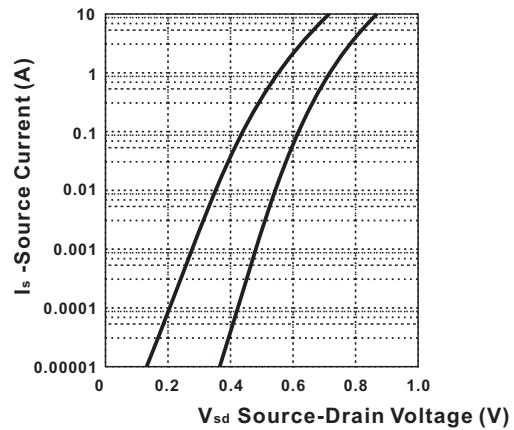


Figure 10: Capacitance Characteristics

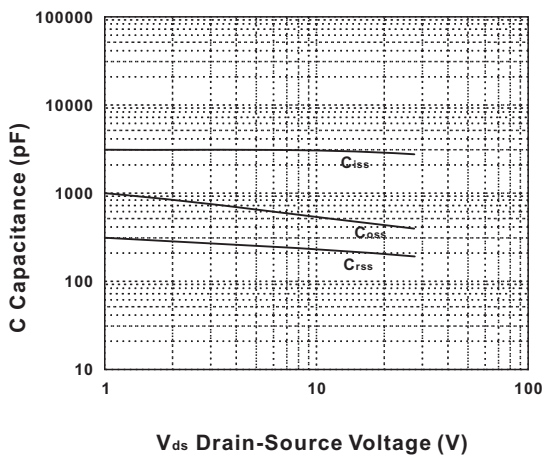
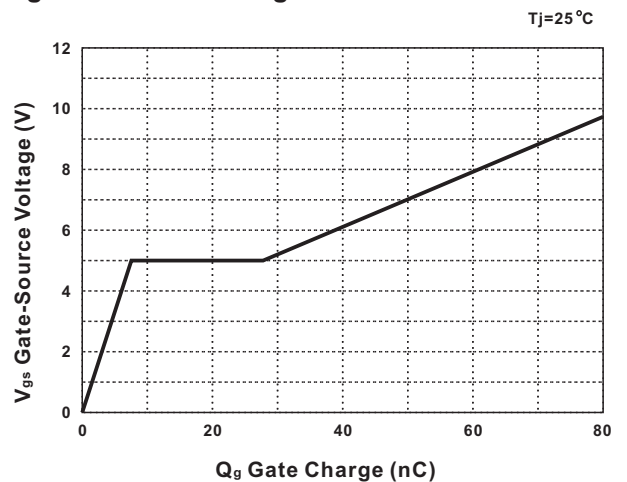
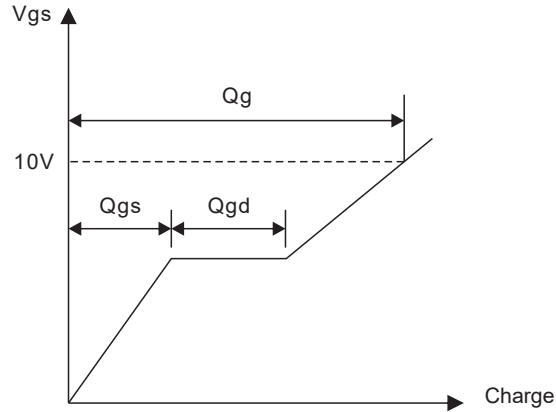
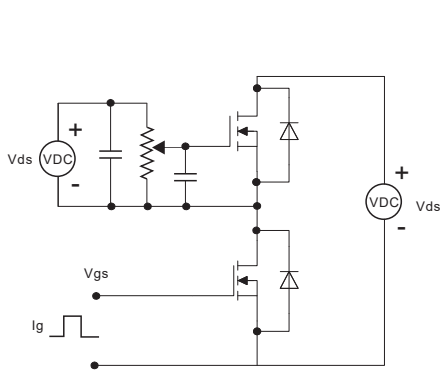


Figure 11: Gate Charge Characteristics

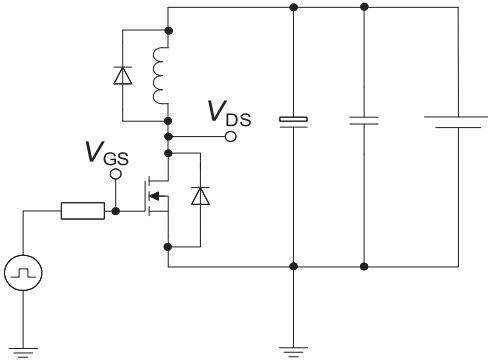


Test Circuit & Waveform

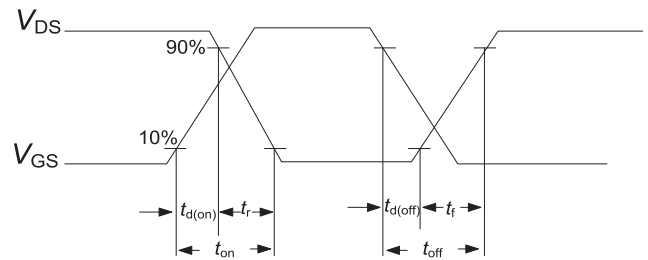
Gate Charge Test Circuit & Waveform



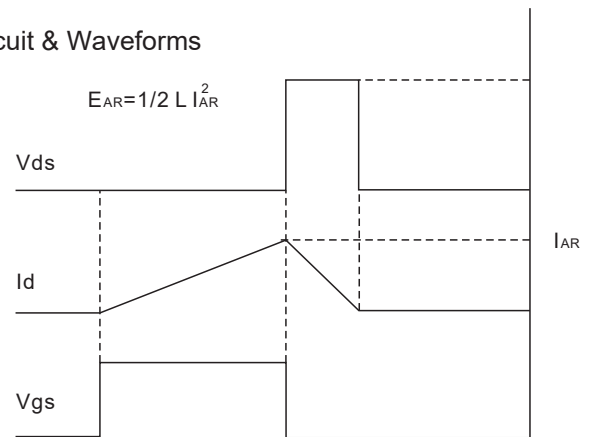
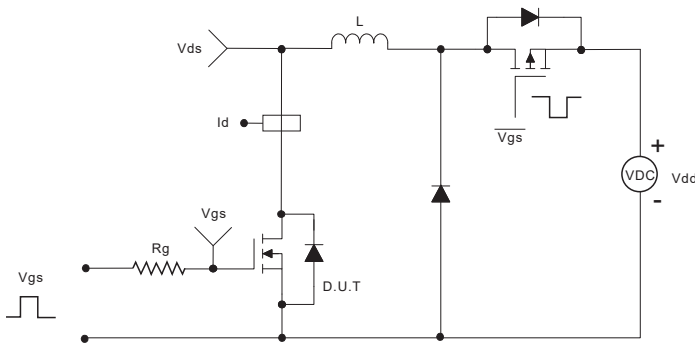
Switching Times Test Circuit for Inductive Load



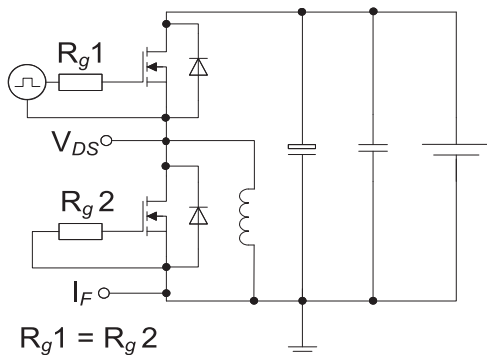
Switching Times Waveform



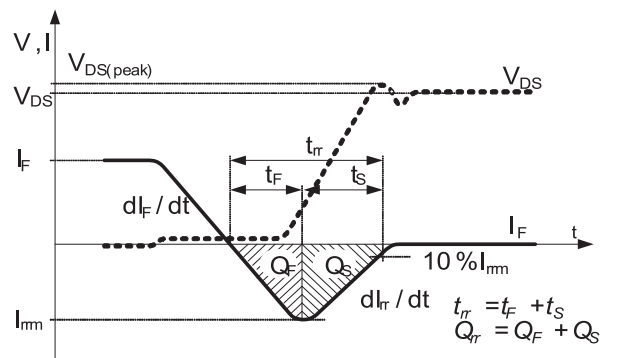
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



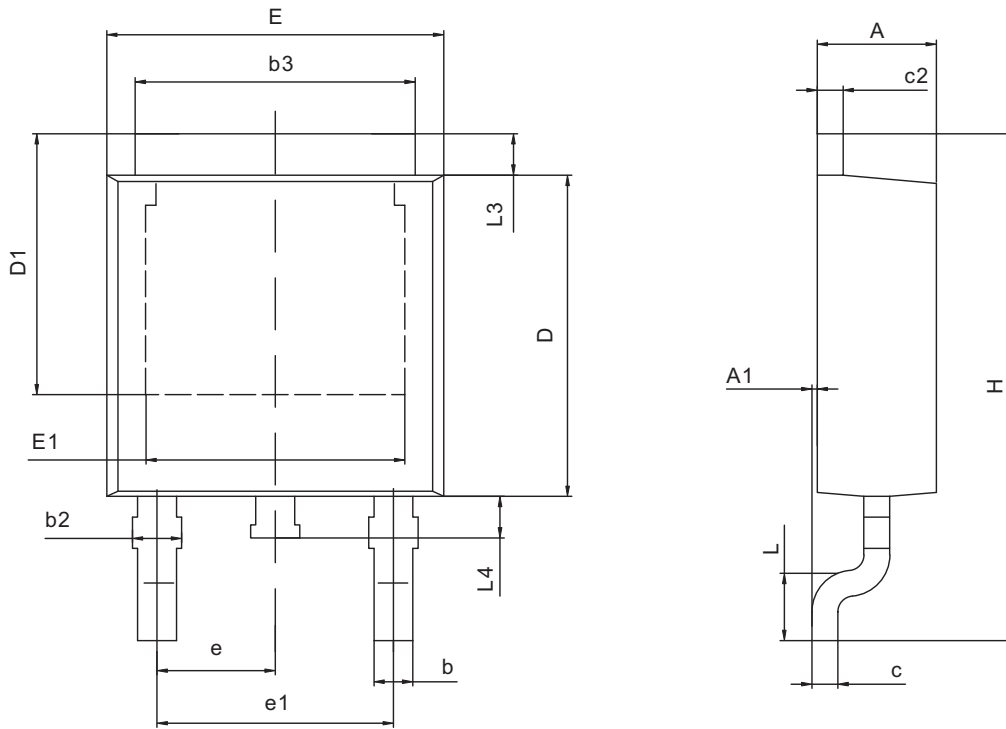
Test Circuit for Diode Characteristics



Diode Recovery Waveform



TO-252 Package Information



Dimension	Millimeters	
	Min.	Max.
A	2.16	2.41
A1	0.00	0.15
b	0.64	0.89
b2	0.65	1.15
b3	4.95	5.50
c	0.46	0.61
c2	0.40	0.98
D	5.97	6.22
D1	5.02	5.84
E	6.35	6.73
E1	4.32	5.50
e	2.29 (BSC)	
e1	4.57	
H	9.40	10.48
L	1.18	1.78
L3	0.89	1.27
L4	0.51	1.02

Revision history

Date	Revision	Changes
28-May-2020	1.0	Initial release

CAUTION / WARNING

Information in this document is believed to be accurate and reliable. However, RDSEMI does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

Users should independently evaluate the suitability of and test each product selected for their own applications, and RDSEMI assumes no liability what's ever relating to the choice, selection or use of the RDSEMI products and services described herein.

RDSEMI reserves the right to change or update, without notice, any information contained in this publication; to change, without notice, the design, construction, processing, or specification of any product; and to discontinue or limit production or distribution of any product.

Information in this document supersedes and replaces all information previously supplied.

Products are not designed, authorized or warranted to be suitable for use in medical, military, aircraft, space or life support equipment, nor in applications where failure or malfunction of an RDSEMI product can reasonably be expected to result in personal injury, death or severe property or environmental damage. RDSEMI accepts no liability for inclusion and/or use of RDSEMI products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from national authorities.

Resale of RDSEMI products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by RDSEMI for the RDSEMI product or service described herein and shall not create or extend in any manner whatsoever, any liability of RDSEMI.

RDSEMI expressly disclaims all implied warranties regarding the information contained herein, including, but not limited to, any implied warranties of merchantability or fitness for a particular purpose. RDSEMI only obligations are those in the RDSEMI Standard Terms and Conditions of Sale and in no case will RDSEMI be liable for any incidental, indirect, or consequential damages arising from the sale, resale, use, or misuse of its products.

Specifications are subject to change without notice
© Copyright 2020, DaJing Semiconductor
All rights reserved