



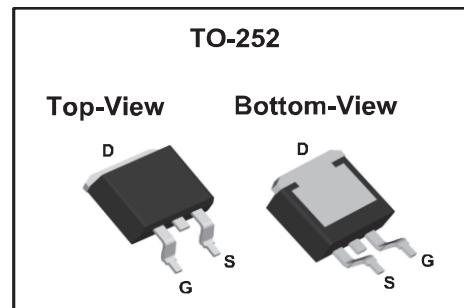
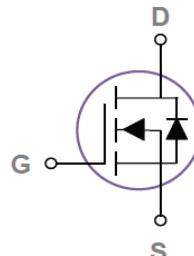
DACO SEMICONDUCTOR CO., LTD.

DAMJ11N650D

N-Channel Enhancement Mode MOSFET

Features

- ◆ $V_{DSS} = 650V$
- ◆ $R_{DS(ON)}$ Typ. 0.33Ω @ $V_{GS} = 10V$
- ◆ High ruggedness performance
- ◆ Super-Junction technology
- ◆ Pb Free & RoHS Compliant

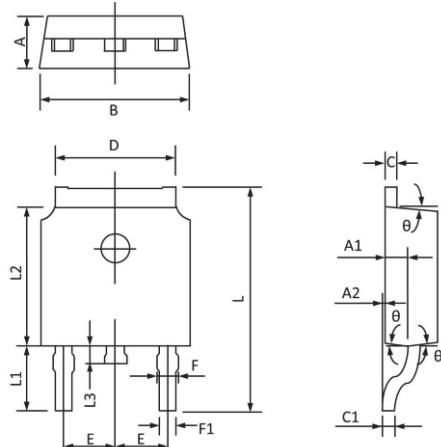


Applications

- ◆ Backlighting
- ◆ Power Converters
- ◆ Synchronous Rectifiers

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Drain Source Voltage	V_{DS}	650	V
Gate Source Voltage	V_{GS}	± 30	V
Drain Current Continuous @ $T_c = 25^\circ C$ @ $T_c = 100^\circ C$	I_D	11 6.7	A
Drain Current Pulsed@ $T_c = 25^\circ C$	I_{DM}	44	A
Single Pulse Avalanche Energy	E_{AS}	272	mJ
Single Pulse Avalanche Current	I_{AS}	7.1	A
Maximum Power Dissipation	P_D	83	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance Junction to Case <small>Note3</small>	$R_{θJC}$	1.5	°C/W



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	2,400	2,200	0.094	0.087
A1	1,110	0,910	0.044	0.036
A2	0,150	0,000	0.006	0,000
B	6,800	6,400	0.268	0.252
C	0,580	0,450	0.023	0.018
C1	0,580	0,460	0.023	0.018
D	5,500	5,100	0.217	0.201
E	2,386	2,186	0.094	0.086
F	1,140	0,600	0.045	0.024
F1	0,880	0,500	0.035	0.020
L	10,400	9,400	0.409	0.370
L1	3,000	2,400	0.118	0.094
L2	6,223	5,400	0.245	0.213
L3	1,200	0,600	0.047	0.024
θ	9°	3°	9°	3°



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Electrical Characteristics @ $T_J=25^\circ\text{C}$ (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OFF Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$\text{V}_{\text{GS}}=0\text{V}$, $\text{I}_{\text{DS}}=250\mu\text{A}$	650	-	-	V
Zero Gate Voltage Drain Current	I_{DS}	$\text{V}_{\text{GS}}=0\text{V}$, $\text{V}_{\text{DS}}=650\text{V}$	-	-	1	μA
Gate-Body Leakage	I_{GSS}	$\text{V}_{\text{GS}}=\pm 30\text{V}$, $\text{V}_{\text{DS}}=0\text{V}$	-	-	± 100	nA
ON Characteristics						
Gate Threshold Voltage	V_{TH}	$\text{V}_{\text{DS}}=\text{V}_{\text{GS}}$, $\text{I}_{\text{DS}}=250\mu\text{A}$	2	-	4	V
Static Drain-Source On-Resistance	$\text{R}_{\text{DS(on)}}$	$\text{V}_{\text{GS}}=10\text{V}$, $\text{I}_{\text{DS}}=5.5\text{A}$	-	0.33	0.38	Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	$\text{V}_{\text{DS}}=50\text{V}$ $\text{V}_{\text{GS}}=0\text{V}$ Freq.=1MHz	-	690	-	pF
Output Capacitance	C_{oss}		-	57	-	
Reverse Transfer Capacitance	C_{rss}		-	2.47	-	
Switching Characteristics						
Turn-On Delay Time	$\text{T}_{\text{d(on)}}$	$\text{V}_{\text{DD}}=380\text{V}$ $\text{V}_{\text{GS}}=10\text{V}$ $\text{R}_G=25\Omega$ $\text{I}_{\text{DS}}=11\text{A}$	-	26	-	ns
Rise Time	T_r		-	28.3	-	
Turn-Off Delay Time	$\text{T}_{\text{d(off)}}$		-	34	-	
Fall Time	T_f		-	33.2	-	
Total Gate Charge	Q_g	$\text{V}_{\text{DS}}=480\text{V}$ $\text{V}_{\text{GS}}=10\text{V}$ $\text{I}_{\text{DS}}=11\text{A}$	-	13	-	nC
Gate to Source Charge	Q_{gs}		-	3.6	-	
Gate to Drain Charge	Q_{gd}		-	5.6	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	$\text{V}_{\text{GS}}=0\text{V}$, $\text{I}_{\text{S}}=11\text{A}$	-	-	1.3	V

Notes:

1. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

2. $\text{V}_{\text{DD}}=50\text{V}$, $\text{V}_{\text{GS}}=10\text{V}$, $\text{L}=10.8\text{mH}$, $\text{I}_{\text{AS}}=7.1\text{A}$, $\text{R}_G=25\Omega$, Starting $\text{T}_J=25^\circ\text{C}$

3. $\text{R}_{\theta_{JA}}$ 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 of the drain pins.

$\text{R}_{\theta_{JC}}$ is guaranteed by design while $\text{R}_{\theta_{CA}}$ is determined by the user's board design. $\text{R}_{\theta_{JA}}$ shown below for single device operation on FR-4 in still air.



Typical Characteristics

Fig.1 Continuous Drain Current vs. T_c

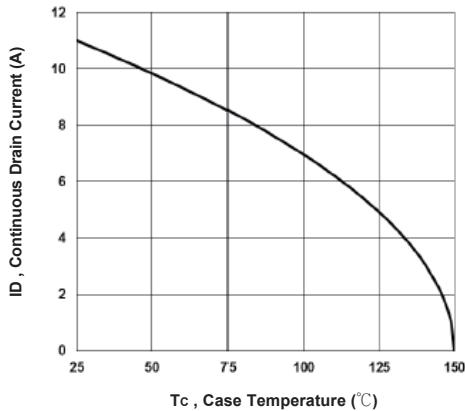


Fig.2 Normalized RDSON vs. T_J

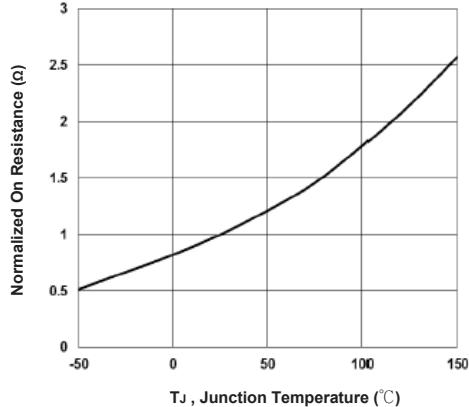


Fig.3 Normalized V_{th} vs. T_J

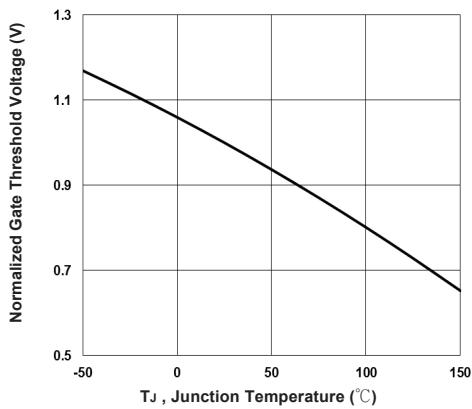


Fig.4 Gate Charge Waveform

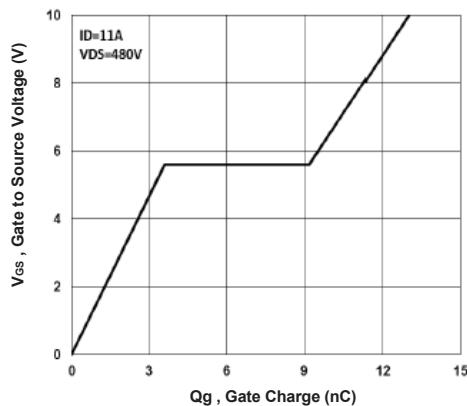


Fig.5 Normalized Transient Impedance

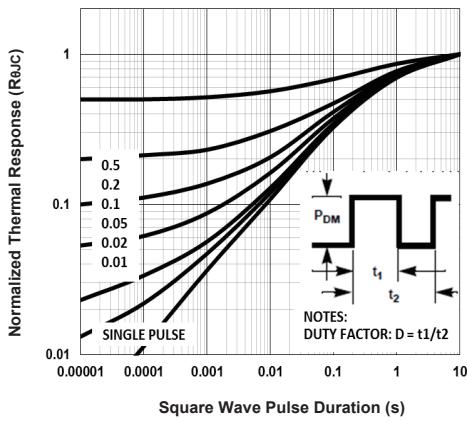
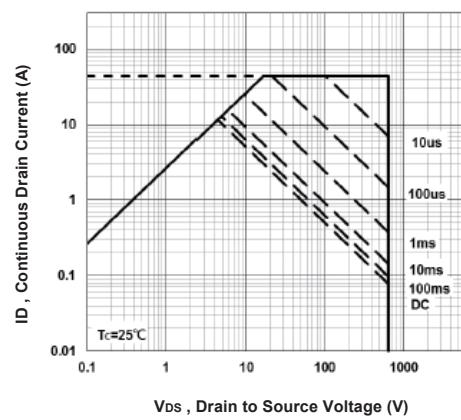


Fig.6 Maximum Safe Operation Area





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Typical Characteristics

Fig.7 Switching Time Waveform

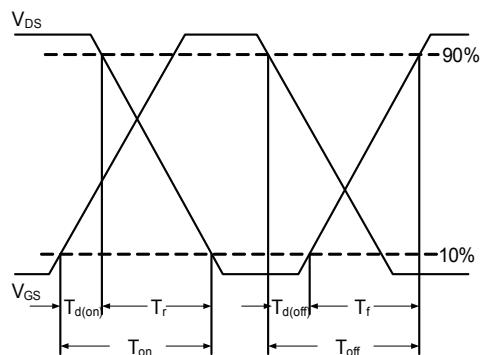


Fig.8 EAS Waveform

