

Dual P-Channel MOSFET

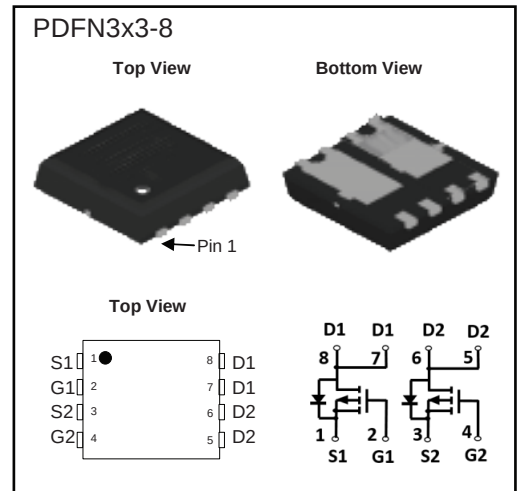
RC30P03DD3

Features

- $V_{DS}=-30V, I_D=-30A$
- $R_{DS(ON)}=12.5m\Omega$ (TYP.) $V_{GS}=-10V, I_D=-10A$
- $R_{DS(ON)}=18.5m\Omega$ (TYP.) $V_{GS}=-4.5V, I_D=-5A$
- Fast Switching
- Low On-Resistance
- Halogen and Antimony Free, RoHS compliant

Applications

- Switch switching
- Power management in portable/desktop PCs



Absolute Maximum Ratings ($T_C=25^\circ C$, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage ($V_{GS}=0V$)	V_{DS}	-30	V
Gate-Source Voltage ($V_{GS}=0V$, static)	V_{GS}	± 25	V
Continuous Drain Current ($T_C=25^\circ C$)	I_D	-30	A
Continuous Drain Current ($T_C=100^\circ C$)		-22	A
Pulsed Drain Current	I_{DM}	-120	A
Avalanche Current ($L=0.3mH$)	I_{AS}	22.5	A
Avalanche Energy, Single Pulsed	E_{AS}	75	mJ
Maximum Power Dissipation ($T_C=25^\circ C$)	P_D	39	W
Maximum Power Dissipation ($T_C=100^\circ C$)		15	W
Operating, Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	-	3.2	-	$^\circ C/W$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	-	56	-	$^\circ C/W$

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RC30P03DD3

Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V$	-	-	-1	μA
Gate -Source Leakage Current	I_{GSS}	$V_{GS}=\pm 25V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.1	-1.5	-2.5	V
Drain-Source On-stage Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-10A$	-	12.5	18	m Ω
		$V_{GS}=-4.5V, I_D=-5A$	-	18.5	26	

Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	$V_{DS}=-15V$	-	1380	-	pF
Output capacitance	C_{oss}	$V_{GS}=0V$	-	160	-	
Reverse transfer capacitance	C_{rss}	$f=1MHz$	-	145	-	
Gate Resistance	R_g	$f=1MHz$	-	7	-	Ω
Total Gate Charge	Q_g	$V_{DS}=-15V$	-	26.4	-	nC
Gate Source Charge	Q_{gs}	$V_{GS}=-10V$	-	6	-	
Gate Drain Charge	Q_{gd}		-	4.3	-	
Turn-on delay Time	$t_{d(on)}$	$V_{GS}=-10V$	-	18	-	ns
Rise time	t_r	$V_{DS}=-15V$	-	22	-	
Turn-off delay Time	$t_{d(off)}$	$R_L=1\Omega$	-	55	-	
Fall time	t_f	$R_G=3\Omega$	-	42	-	

Reverse Diode Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Body Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=-1A$	-	-0.75	-1	V
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_{SD}=-10A$	-	32	-	ns
Reverse Recovery Charge	Q_{rr}	$dI/dt=100A/\mu s$	-	28	-	nC

Dual P-Channel MOSFET RC30P03DD3

Electrical Characteristics Diagrames

Figure 1. On-Regin Characteristics

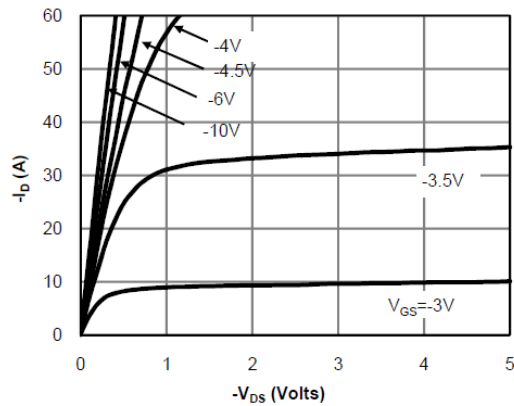


Figure 2. Transfer Characteristics

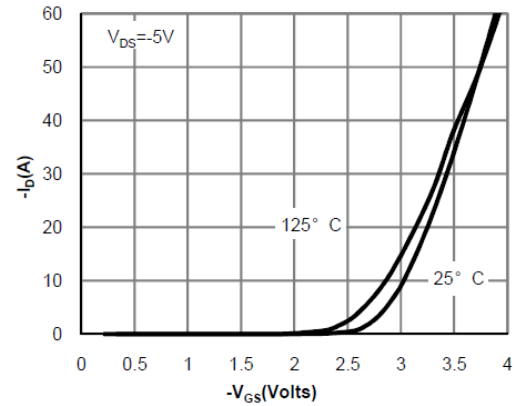


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

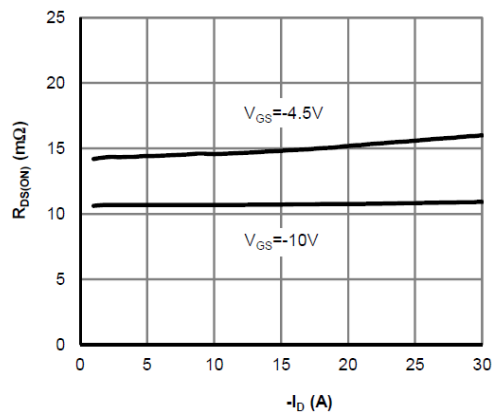


Figure 4. On-Resistance vs. Junction Temperature

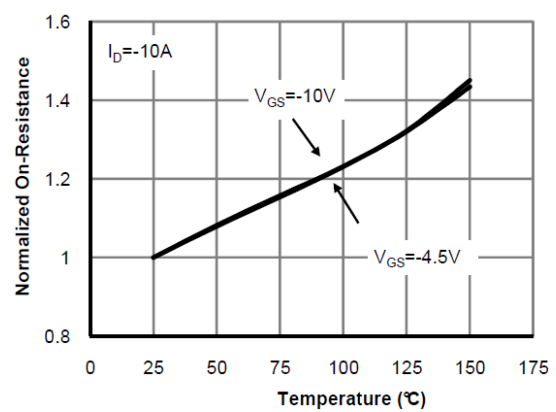


Figure 5. On-Resistance vs. Gate-Source Voltage

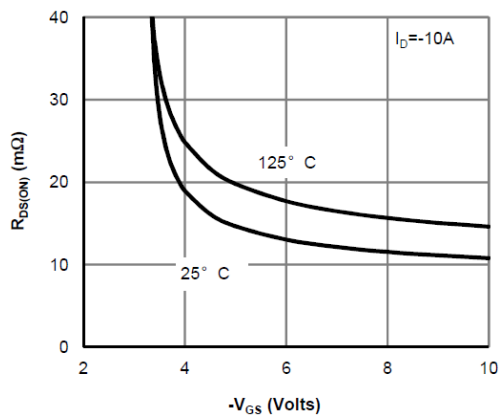
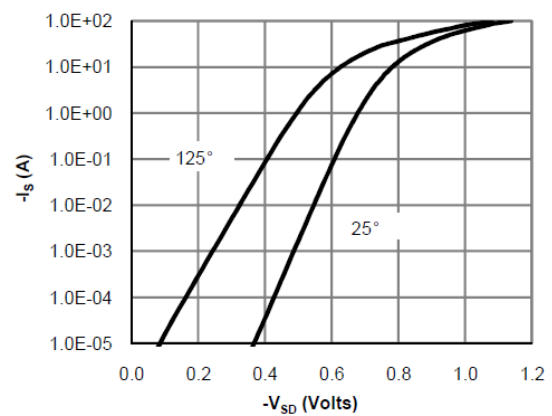


Figure 6. Body-Diode Characteristics



Dual P-Channel MOSFET

RC30P03DD3

Figure 7. Gate-Charge Characteristics

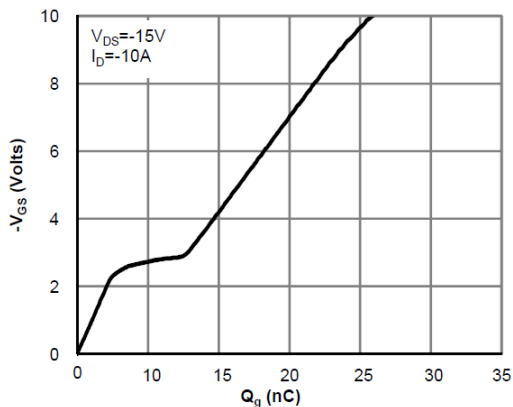


Figure 8. Capacitance Characteristics

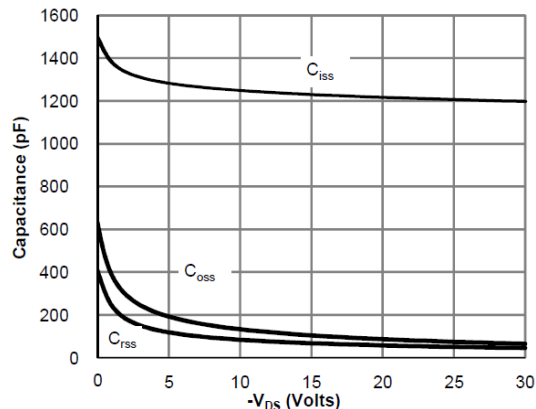


Figure 9. Maximum Forward Biased Safe Operating Area

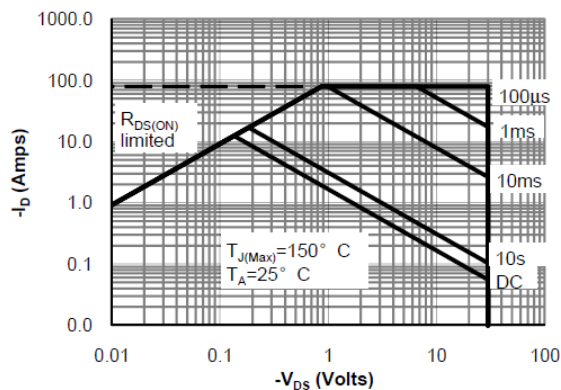


Figure 10. Single Pulse Power Rating Junction-to-Ambient

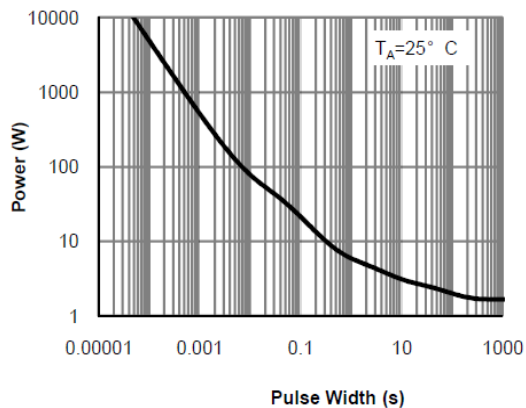
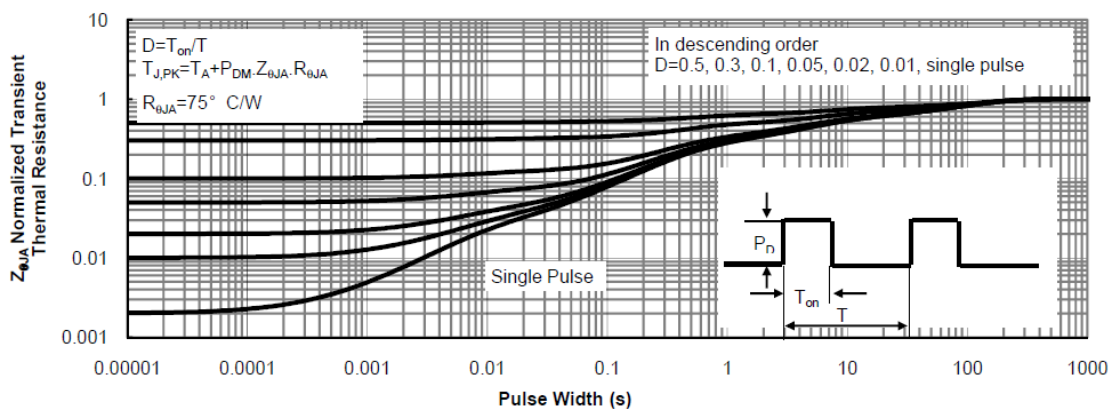


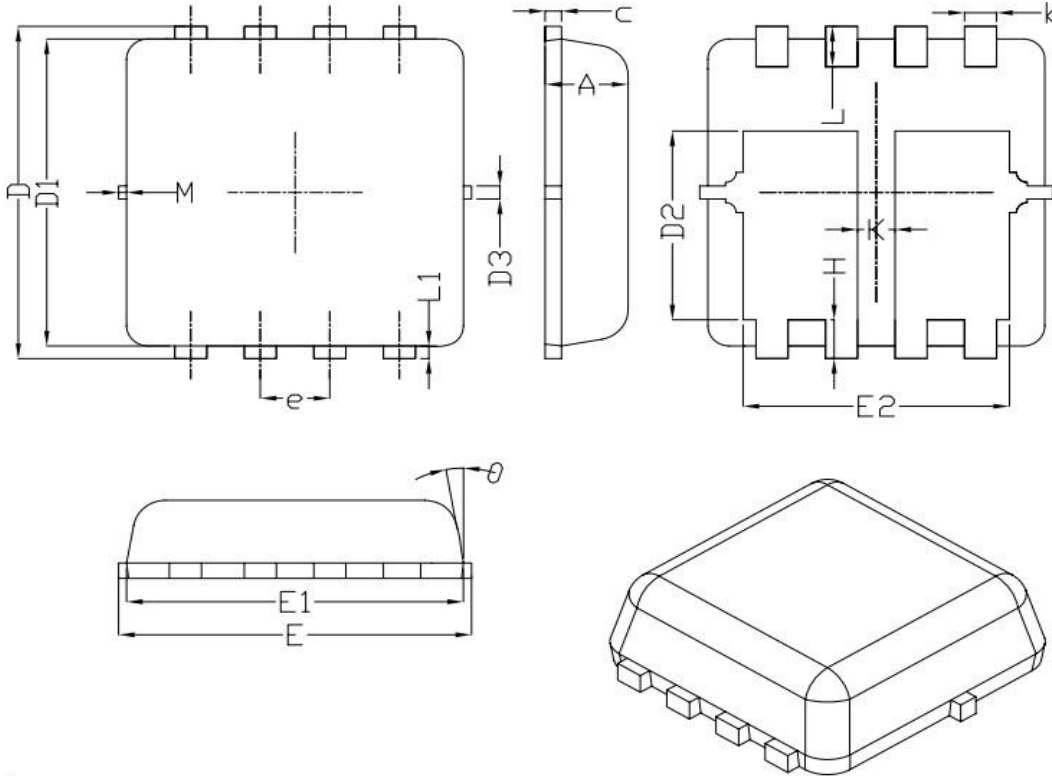
Figure 11. Normalized Maximum Transient Thermal Impedance



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Dual PDFN3X3-8L SPackageOutlineData



Symbol	Dimensions (unit: mm)		
	Min	Typ	Max
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.78	1.88	1.98
D3	--	0.13	--
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65 BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	--	0.13	--
K	0.30	--	--
θ	--	10°	12°
M	*	*	0.15
* Not Specified			

Notes:

1. Refer to JEDEC MO-240 variation CA.
2. Dimensions "D1" and "E1" do NOT include mold flash protrusions or gate burrs.
3. Dimensions "D1" and "E1" include interterminal flash or protrusion.