Absolute maximum ratings

Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{DSS}	70	V
Gate-source voltage	V_{GS}	±20	V
Continuous drain current @ V_{GS}=10V; T_A=25°C (b) @ V_{GS}=10V; T_A=70°C (b) @ V_{GS}=10V; T_A=25°C (a)	I_D	6.1 4.9 4.2	A
Pulsed drain current (c)	I_{DM}	17	A
Continuous source current (body diode) (b)	I_S	8.7	A
Pulsed source current (body diode) (c)	I_{SM}	17	A
Power dissipation at T_A =25°C (a) Linear derating factor	P_D	4.06 32.4	W mW/°C
Power dissipation at T_A =25°C (b) Linear derating factor	P_D	8.5 68	W mW/°C
Power dissipation at T_A =25°C (d) Linear derating factor	P_D	2.11 16.8	W mW/°C
Operating and storage temperature range	T_j, T_{stg}	-55 to +150	°C

Thermal resistance

Parameter	Symbol	Limit	Unit
Junction to ambient	$R_{\Theta JA}$	30.8	°C/W
Junction to ambient	$R_{\Theta JA}$	14.7	°C/W
Junction to ambient	$R_{\Theta JA}$	59.1	°C/W

NOTES:

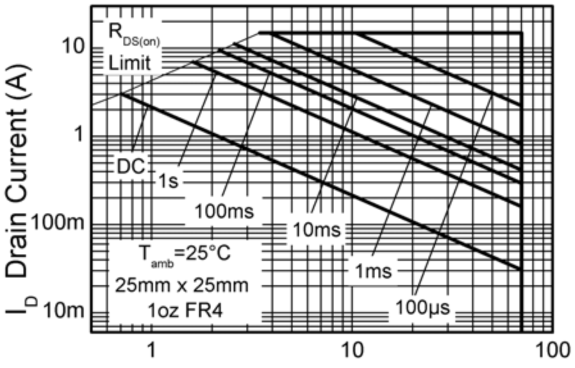
(a) For a device surface mounted on 50mm x 50mm x 1.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions.

(b) For a device surface mounted on FR4 PCB measured at t ≤ 10 sec.

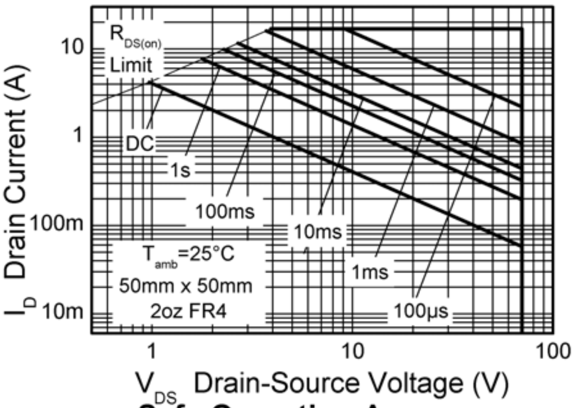
(c) Repetitive rating 50mm x 50mm x 1.6mm FR4 PCB, D=0.02 pulse width=300µs - pulse width limited by maximum junction temperature.

(d) For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

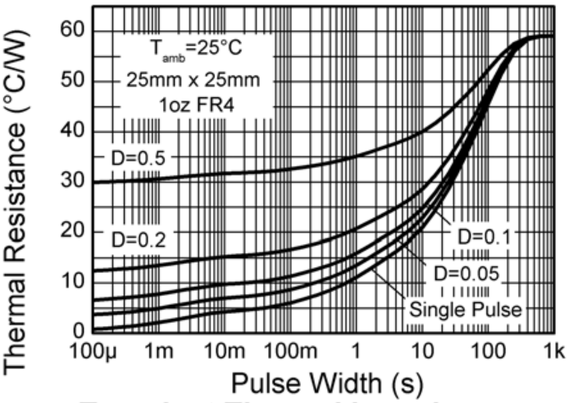
Characteristics



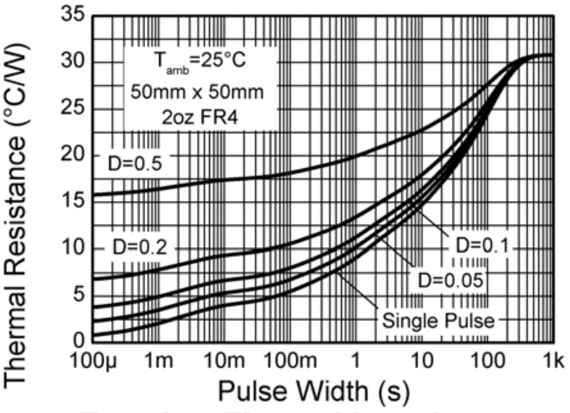
Safe Operating Area



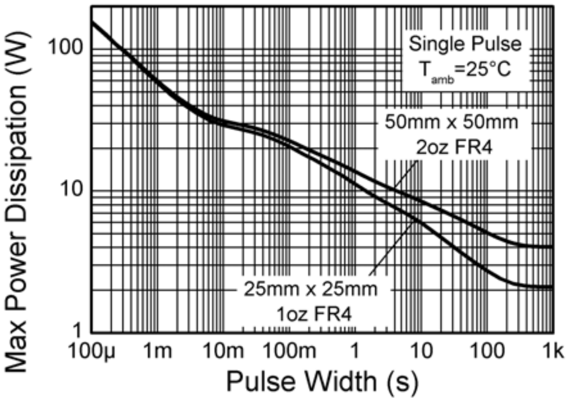
Safe Operating Area



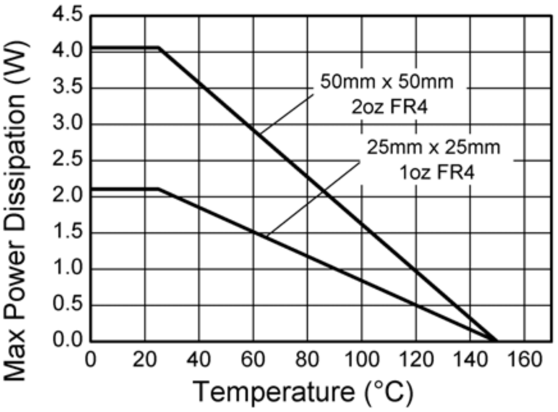
Transient Thermal Impedance



Transient Thermal Impedance



Pulse Power Dissipation



Derating Curve

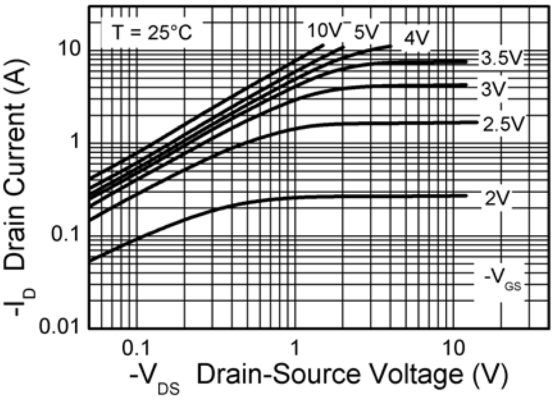
Electrical characteristics (at Tamb = 25°C unless otherwise stated)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	70			V	I_D= 250µA, V_{GS}=0V
Zero gate voltage drain current	I_{DSS}			1	µA	V_{DS}= 70V, V_{GS}=0V
Gate-body leakage	I_{GSS}			100	nA	V_{GS}=±20V, V_{DS}=0V
Gate-source threshold voltage	$V_{GS(th)}$	1.0			V	I_D= 250µA, V_{DS}=V_{GS}
Static drain-source on-state resistance (*)	$R_{DS(on)}$			0.13	Ω	V_{GS}= 10V, I_D= 4.4A
				0.19	Ω	V_{GS}= 4.5V, I_D = 3.8A
Forward transconductance(*)(‡)	g_{fs}		4.66		S	V_{DS}= 15V, I_D= 4.4A
Dynamic(‡)						
Input capacitance	C_{iss}		298		pF	V_{DS}= 40V, V_{GS}=0V f=1MHz
Output capacitance	C_{oss}		35		pF	
Reverse transfer capacitance	C_{rss}		21		pF	
Switching (†) (‡)						
Turn-on-delay time	$t_{d(on)}$		1.9		ns	V_{DD}= 35V, I_D= 1A R_G≅6.0Ω, V_{GS}= 10V
Rise time	t_r		2		ns	
Turn-off delay time	$t_{d(off)}$		11.5		ns	
Fall time	t_f		5.8		ns	
Total gate charge	Q_g		4.35		nC	V_{DS}= 35V, V_{GS}= 5V I_D= 4.4A
Total gate charge	Q_g		7.4		nC	V_{DS}=35V, V_{GS}= 10V I_D= 4.4A
Gate-source charge	Q_{gs}		1.06		nC	
Gate drain charge	Q_{gd}		1.8		nC	
Source-drain diode						
Diode forward voltage(*)	V_{SD}		0.85	0.95	V	T_j=25°C, I_S= 2.5A, V_{GS}=0V
Reverse recovery time (‡)	t_{rr}		19.8		ns	T_j=25°C, I_S= 2.5A, di/dt=100A/µs
Reverse recovery charge(‡)	Q_{rr}		14		nC	

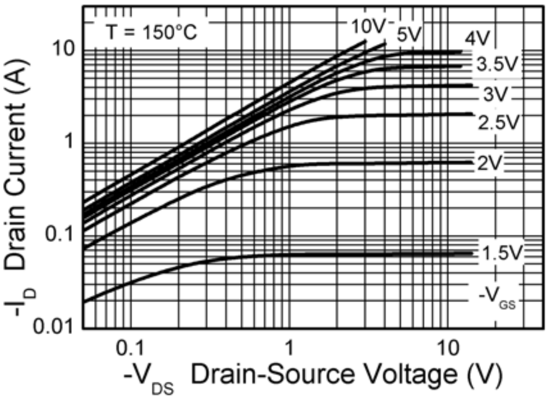
NOTES:

(*) Measured under pulsed conditions. Pulse width ≤ 300µs; duty cycle ≤ 2%.
(†) Switching characteristics are independent of operating junction temperature.
(‡) For design aid only, not subject to production testing.

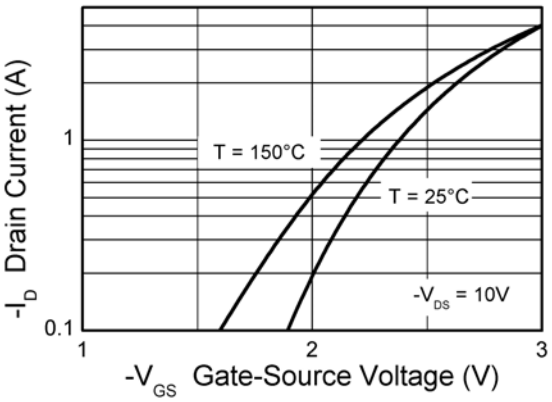
Typical characteristics



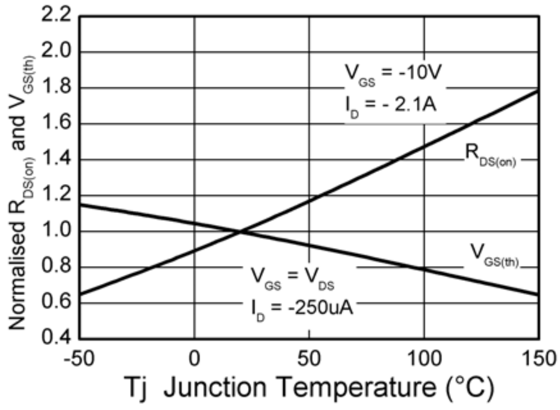
Output Characteristics



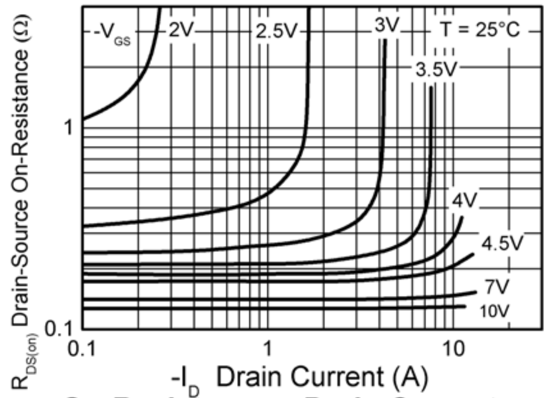
Output Characteristics



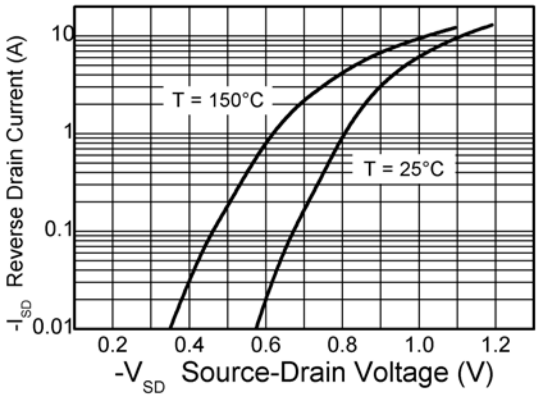
Typical Transfer Characteristics



Normalised Curves v Temperature

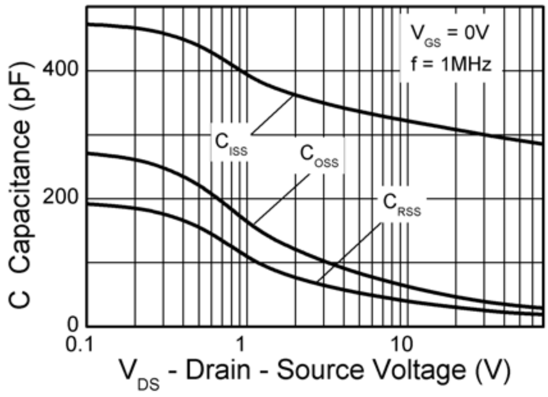


On-Resistance v Drain Current

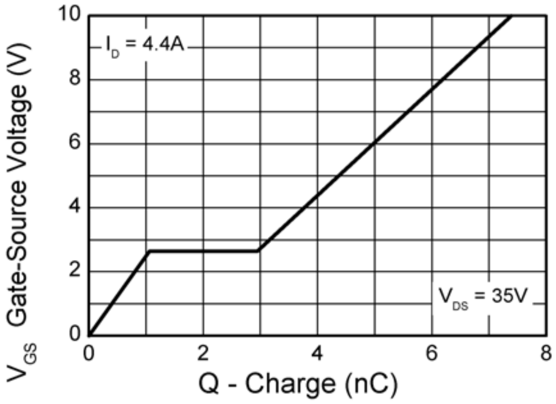


Source-Drain Diode Forward Voltage

Typical characteristics



Capacitance v Drain-Source Voltage



Gate-Source Voltage v Gate Charge

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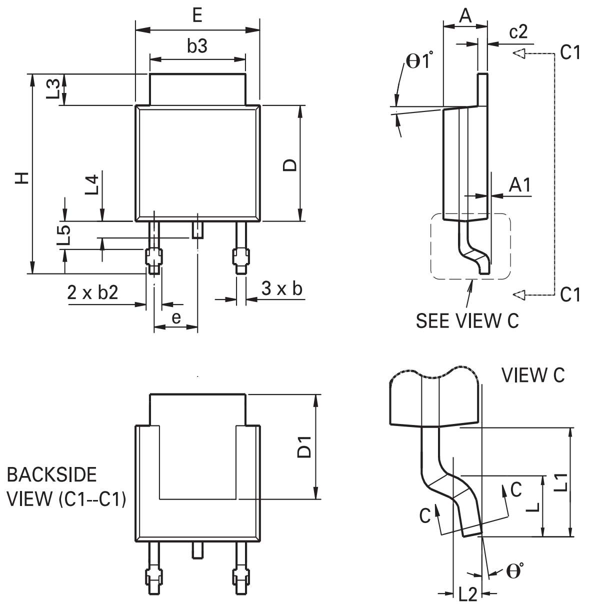
Package outline - DPAK



DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min	Max	Min	Max		Min	Max	Min	Max
A	0.086	0.094	2.18	2.39	e	0.090 BSC		2.29 BSC	
A1	-	0.005	-	0.127	H	0.370	0.410	9.40	10.41
b	0.020	0.035	0.508	0.89	L	0.055	0.070	1.40	1.78
b2	0.030	0.045	0.762	1.14	L1	0.108 REF		2.74 REF	
b3	0.205	0.215	5.21	5.46	L2	0.020 BSC		0.508 BSC	
c	0.018	0.024	0.457	0.61	L3	0.035	0.065	0.89	1.65
c2	0.018	0.023	0.457	0.584	L4	0.025	0.040	0.635	1.016
D	0.213	0.245	5.41	6.22	L5	0.045	0.060	1.14	1.52
D1	0.205	-	5.21	-	θ1°	0°	10°	0°	10°
E	0.250	0.265	6.35	6.73	θ°	0°	15°	0°	15°
E1	0.170	-	4.32	-	-	-	-	-	-

Note: Controlling dimensions are in inches. Approximate dimensions are provided in millimeters

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