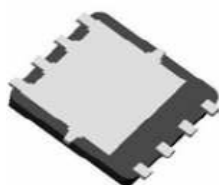
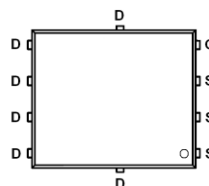
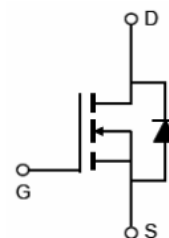


Main Product Characteristics:

V_{DSS}	100V
$R_{DS(on)}$	8m Ω (typ.)
I_D	34A


PRPAK 5x6

Pin Assignment

Schematic diagram
Features and Benefits:

- Advanced MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150°C operating temperature


Description:

It utilizes the latest processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications.

Absolute max Rating:

Symbol	Parameter	Max.	Units
I_D @ TC = 25°C	Continuous Drain Current, V_{GS} @ 10V ①	34	A
I_{DM}	Pulsed Drain Current ②	120	
P_D @TC = 25°C	Power Dissipation ③	56	W
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy @ L=0.3mH	33	mJ
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

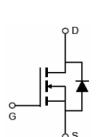
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case ③	—	2.2	$^{\circ}\text{C}/\text{W}$
$R_{\theta JA}$	Junction-to-ambient ($t \leq 10\text{s}$) ④	—	50	$^{\circ}\text{C}/\text{W}$

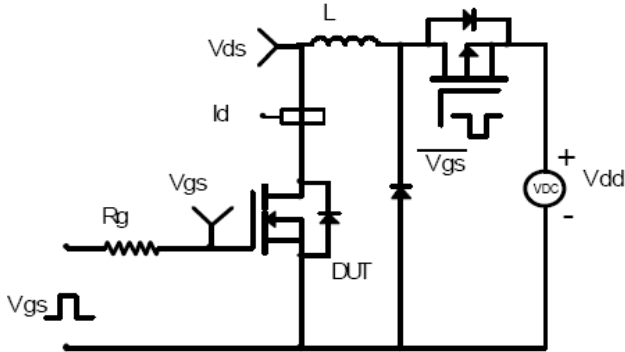
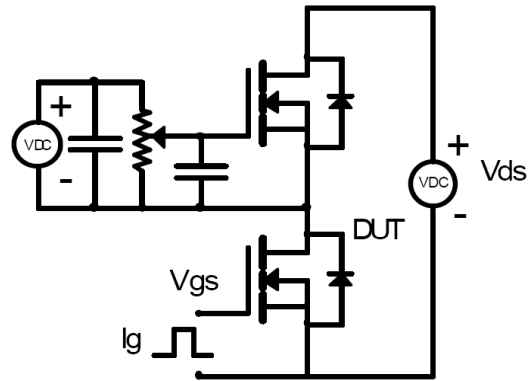
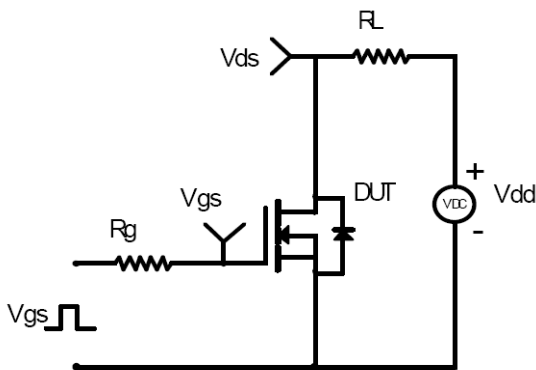
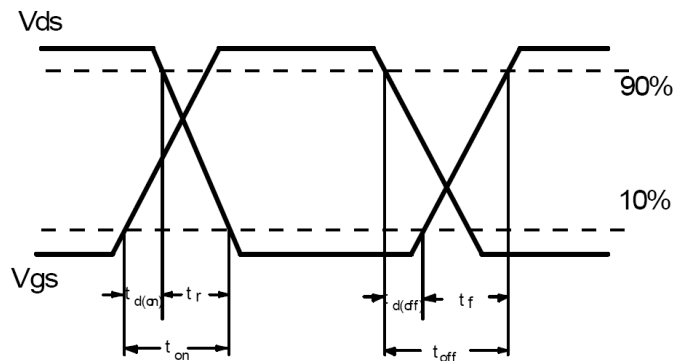
Electrical Characterizes @ $T_A=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	100	—	—	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	8	12	m Ω	$V_{GS}=10\text{V}, I_D=20\text{A}$
		—	11.6	15		$V_{GS}=4.5\text{V}, I_D=10\text{A}$
$V_{GS(th)}$	Gate threshold voltage	1.2	—	2.5	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	$V_{DS} = 80\text{V}, V_{GS} = 0\text{V}$
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS} = 20\text{V}$
		—	—	-100		$V_{GS} = -20\text{V}$
Q_g	Total gate charge	—	40	—	nC	$I_D = 20\text{A},$ $V_{DS}=50\text{V},$ $V_{GS} = 10\text{V}$
Q_{gs}	Gate-to-Source charge	—	8	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	10	—		
$t_{d(on)}$	Turn-on delay time	—	12	—	ns	$V_{GS}=10\text{V}, V_{DS}=350\text{V},$ $R_{GEN}=3.3\Omega$ $I_D = 20\text{A}$
t_r	Rise time	—	9	—		
$t_{d(off)}$	Turn-Off delay time	—	50	—		
t_f	Fall time	—	10	—		
C_{iss}	Input capacitance	—	3120	—	pF	$V_{GS} = 0\text{V}$ $V_{DS} = 50\text{V}$ $f = 1\text{MHz}$
C_{oss}	Output capacitance	—	690	—		
C_{riss}	Reverse transfer capacitance	—	30	—		

Source-Drain Ratings and Characteristics

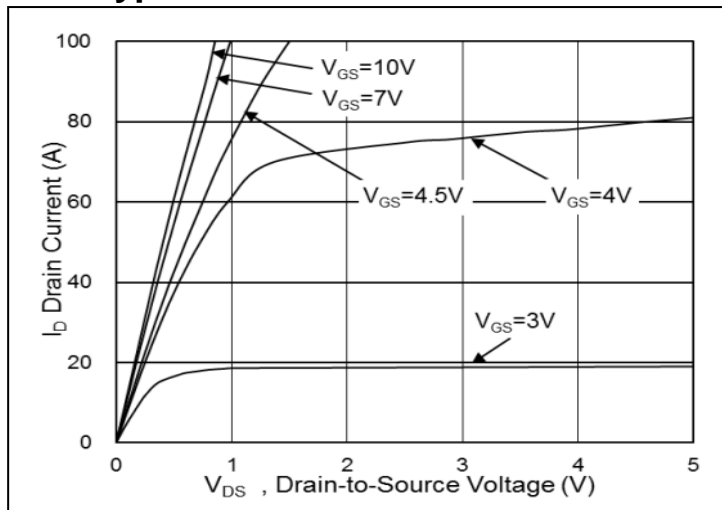
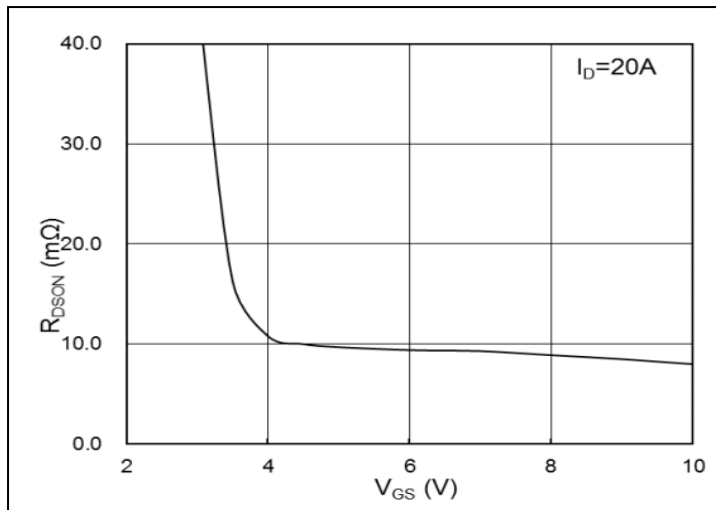
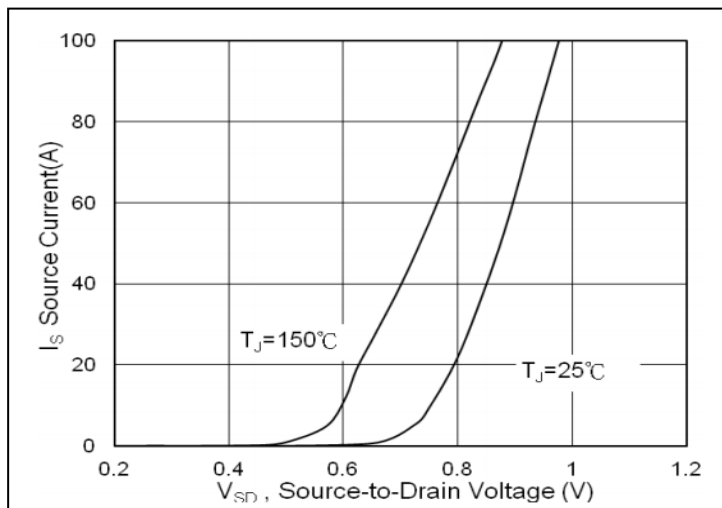
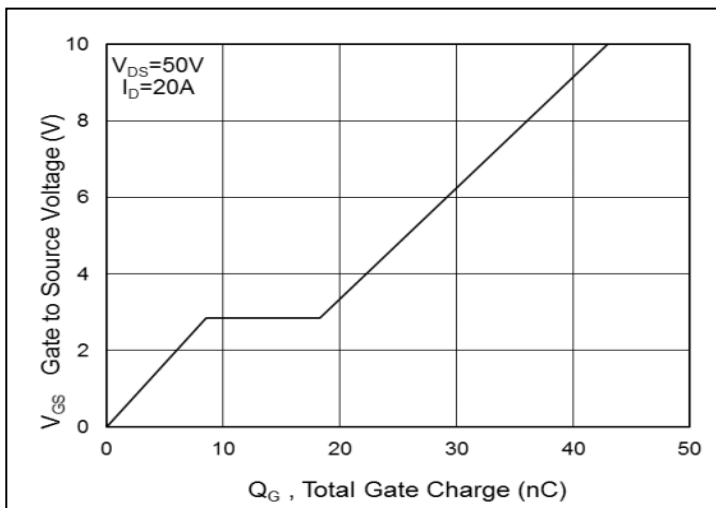
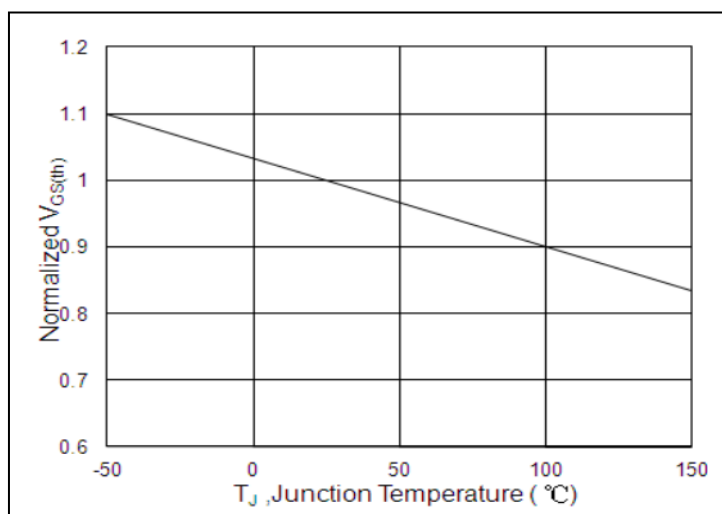
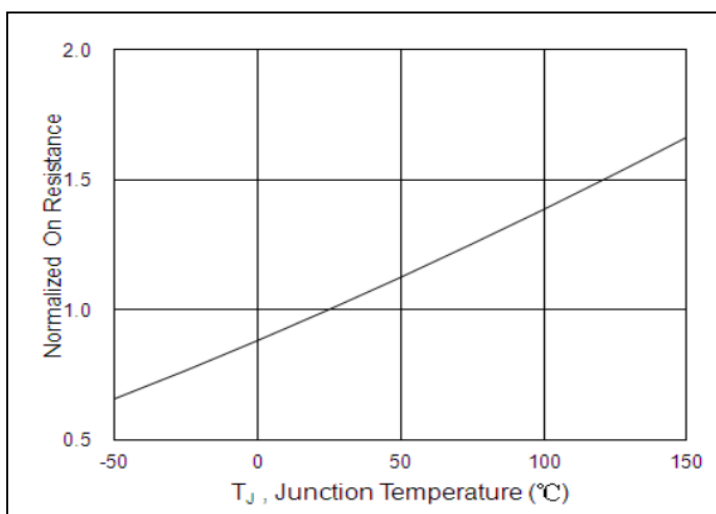
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	34	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	120	A	
V_{SD}	Diode Forward Voltage	—	—	1.2	V	$I_S=1\text{A}, V_{GS}=0\text{V}$
t_{rr}	Reverse Recovery Time	—	40	—	ns	$I_S=20\text{A}, di/dt=100\text{A}/\mu\text{s}$
Q_{rr}	Reverse Recovery Charge	—	160	—	nC	

Test circuits and Waveforms

EAS Test Circuit:

Gate charge test circuit:

Switching Time Test Circuit:

Switching Waveforms:


Notes:

- ① Calculated continuous current based on maximum allowable junction temperature.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.
- ④ The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$

Typical electrical and thermal characteristics

Figure 1: Typical Output Characteristics

Figure 2: $R_{DS(on)}$ vs. V_{GS}

Figure 3: Diode Forward Voltage vs. Current

Figure 4: Gate-Charge Characteristics

Figure 5: $V_{GS(th)}$ vs. Junction Temperature

Figure 6: $R_{DS(on)}$ vs. Junction Temperature

Typical electrical and thermal characteristics

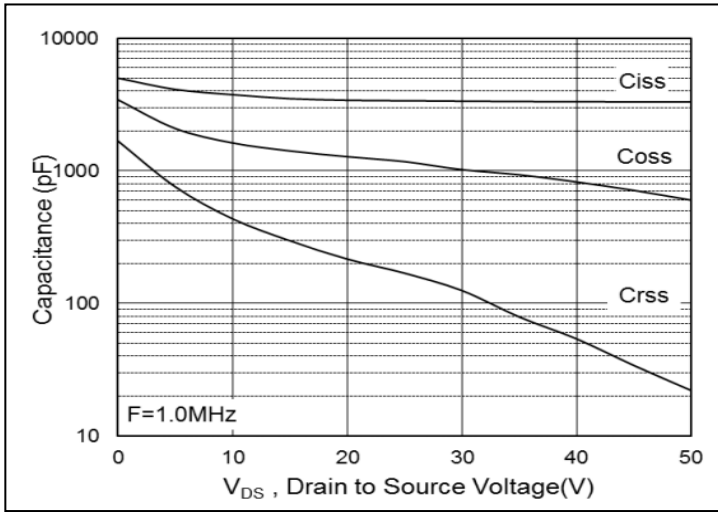


Figure 7: Capacitance

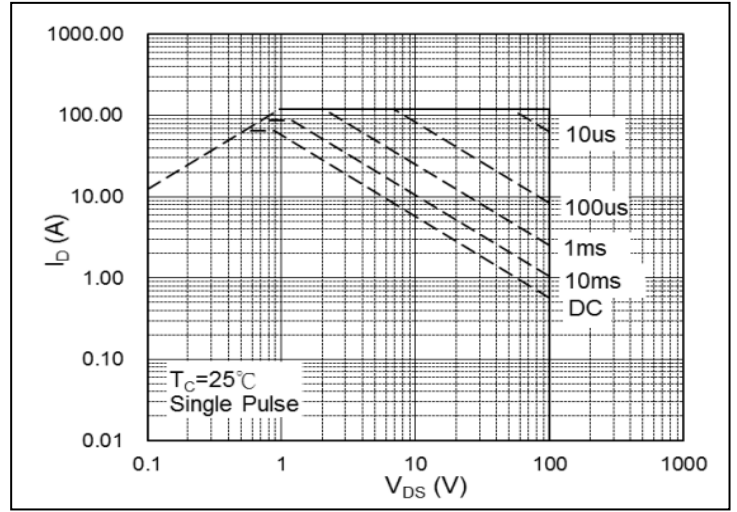


Figure 8: Safe Operating Area

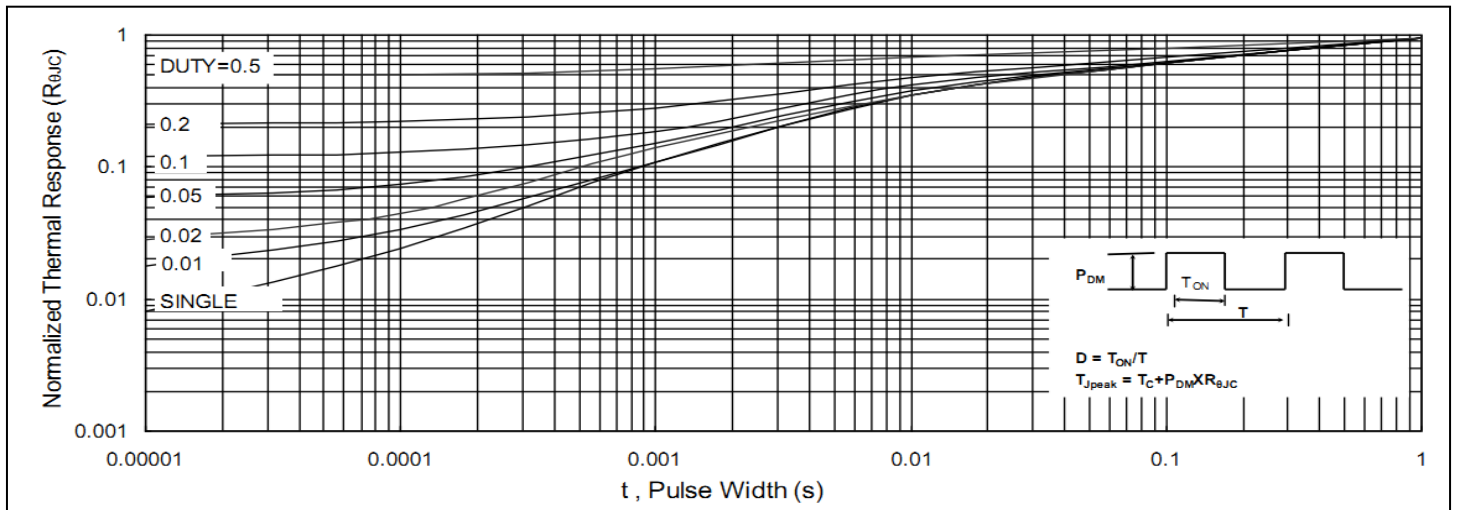
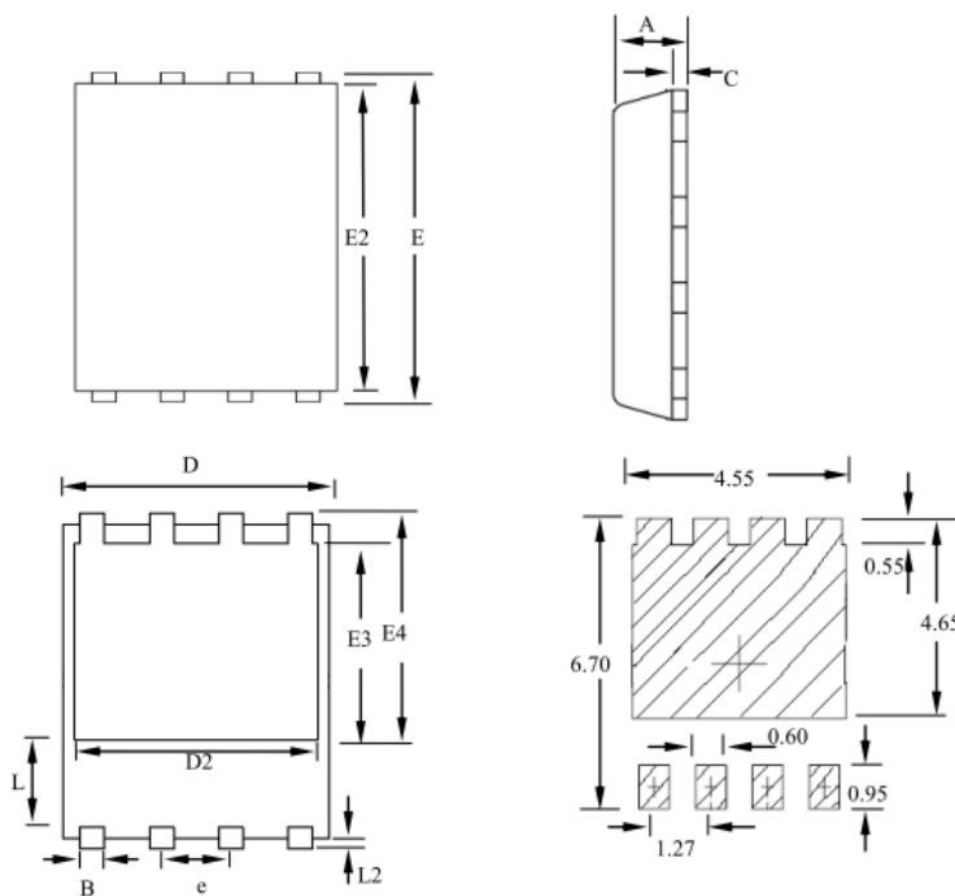


Figure 9: Normalized Maximum Transient Thermal Impedance

Mechanical Data:


LAND PATTERN RECOMMENDATION

SYMBOLS	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	--	1.20	0.031	--	0.047
B	0.30	--	0.51	0.012	--	0.020
C	0.15	--	0.35	0.006	--	0.014
D	4.80	--	5.30	0.189	--	0.209
D2	3.61	--	4.35	0.142	--	0.171
E	5.90	--	6.35	0.232	--	0.250
E2	5.42	--	5.90	0.213	--	0.232
E3	3.23	--	3.90	0.127	--	0.154
E4	3.69	--	4.55	0.145	--	0.179
L	0.61	--	1.80	0.024	--	0.071
L2	0.05	--	0.36	0.002	--	0.014
e	--	1.27	--	--	0.050	--

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