N-Channel 60V MOSFET

FEATURES

●Advance Trench Process Technology

●High Density Cell Design for Ultra Low On-resistance

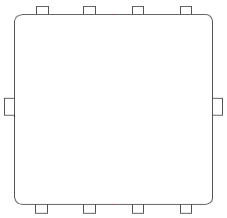
PRODUCTY SUMMARY		
V_{DS}	$R_{DS(on)}$ m(Ω) Max	
60	54	@V_{GS}=10V
	60	@V_{GS}=4.5V

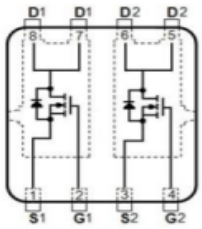
Application

●Portable Devices

●Consumer Electronics

DFN3333





Mechanical

●Case:DFN3333 Package

Packing Information

Package	Packing
DFN3333	5Kpcs/13"Reel

Maximum Ratings (T_A=25°C unless otherwise specified)			
Parameter	**Symbol**	**Limit**	**Unit**
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current [1)]	I_D	10	A
Continuous Drain Current [4)]	I_{DM}	40	A
Maximum Power Dissipation	P_D	5	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C

Typical Thermal Resistance			
Parameter	**Symbol**	**Limit**	**Unit**
Junction-to-Ambient Thermal Resistance [3)]	$R_{\theta JA}$	34	°C/W

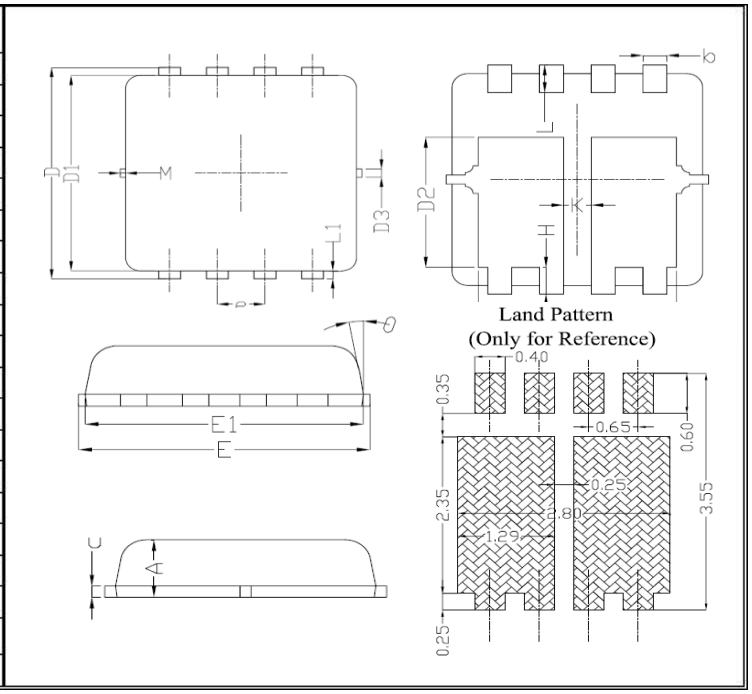
Note:
1. Pulse width<300us, Duty cycle<2%.
2. Fused current that based on wire numbers and diameter.
3. Guaranteed by design, not subject to production testing.
4. The maximum current rating is package limited.
5. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and duty cycles to keepinitial T_J =25°C.

Electrical Characteristics (T_A = 25°C UNLESS OTHERWISE NOTED)						
Characteristics	Symbol	Test Condition	Limits			Unit
			Min	Typ	Max	
Static						
Drain-Source Breakdown Voltage	B_{VDSS}	V_{GS}=0V, I_D=250uA	60	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250uA	1.0	1.7	3.0	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=10A	-	42	54	mΩ
		V_{GS}=4.5V, I_D=9A	-	45	60	mΩ
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V	-	-	1	uA
GateSource Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Dynamic [3]						
Total Gate Charge	Q_g	V_{DS}=30V, V_{GS}=4.5V, I_D=5.3A (Note 1,2)	-	2	-	nC
GateSource Charge	Q_{gs}		-	3	-	nC
GateDrain Charge	Q_{gd}		-	6	-	nC
Input Capacitance	C_{iss}	V_{DS}=30V, V_{GS}=0V, f=200KHz	-	714	-	pF
Output Capacitance	C_{oss}		-	54	-	pF
Reverse Transfer Capacitance	C_{rss}		-	38	-	pF
Switching						
TurnOn Delay Time	$t_{d(on)}$	V_{DS}=30V, Vgen=4.5V, I_D=5A , Rg=1Ohm	-	17	-	ns
TurnOn Rise Time	t_r		-	18	-	ns
TurnOff Delay Time	$t_{d(off)}$		-	24	-	ns
TurnOff Fall Time	t_f		-	7	-	ns
DrainSource Diode						
Maximum Continuous Body Diode Forward Current	I_S	-	-	-	1.2	A
Diode Forward Voltage	V_{SD}	I_S=1.0A, V_{GS}=0V	-	-	1.5	V

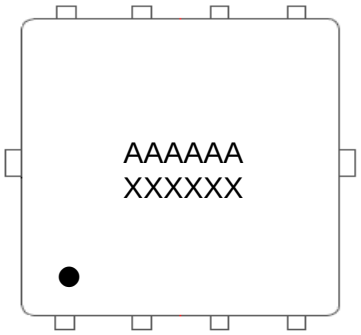
Note:
1. Pulse width<300us, Duty cycle<2%.
2. Essentially independent of operating temperature typical characteristics.
3. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and duty cycles to keep initial T_J =25°C.
4. The maximum current rating is package limited.
5. R_{QJA} 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. Mounted on a 1 inch2 with 2oz.square pad of copper.
6. Guaranteed by design, not subject to production testing.

Package Outline Dimensions (inches and millimeters)

DFN3333				
SYMBOL	Dimensions			
	Millimeters		Inches	
	Min	Max	Min	Max
A	0.70	0.80	0.03	0.03
b	0.25	0.35	0.01	0.01
c	0.10	0.25	0.00	0.01
D	3.25	3.45	0.13	0.14
D1	3.00	3.20	0.12	0.13
D2	1.78	1.98	0.07	0.08
D3	-	0.13	-	0.01
E	3.20	3.40	0.13	0.13
E1	3.00	3.20	0.12	0.13
E2	2.39	2.59	0.09	0.10
e	0.65BSC			
H	0.30	0.50	0.01	0.02
L	0.30	0.50	0.01	0.02
L1	0.13		-	0.005
K	0.30	-	0.01	-
θ	-	12°	-	12°
M	-	0.15	-	0.01



Marking Information



AAAAAA = Product number

XXXXXX = Tracking number

Third line = Pin1 Point