DUAL N-Channel 60V(D-S) MOSFET

Product summary		
V_{DS}	60	V
$R_{DS(ON)}$(at V_{GS}=10V) Typ.	33	mΩ
$R_{DS(ON)}$(at V_{GS}=4.5V) Typ.	36	mΩ
I_D(Tc=25℃)	16	A

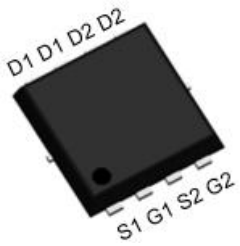
Features

- Surface mount package
- Reliable and Rugged
- RoHS Compliant & Halogen-Free

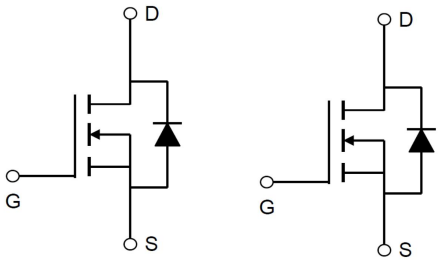
Applications

- Power management functions

Pin Configuration



PDFN5X6-8L



Packing Information

Device	Marking	Reel Size	Tape Width	Quantity
ECAP16N06D	60400/.XXXX	13″	12mm	3000pcs

Absolute Maximum Ratings (at TA=25℃ Unless Otherwise Noted)

Symbol	Parameter		Rating	Units
V_{DS}	Drain-Source Voltage		60	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current at V_{GS}=10V	T_C=25℃	16	A
		T_C=100℃	10	A
I_{DM}	Pulse Drain Current Tested [A]		27	A
E_{AS}	Single Pulse Avalanche Energy		14.5	mJ
P_D	Power Dissipation		18.7	W
T_J,T_{STG}	Junciton and Storage Temperature Range		-55 to +150	℃

Thermal Characteristics

Symbol	Parameter	Typical	Units
$R_{\theta JA}$	Thermal Resistance-Junction to ambient [B]	88	℃/W

Electrical Characteristics (at T_J =25℃ Unless Otherwise Noted)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
Static Parameters						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	60	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=48V,V_{GS}=0V	--	--	1	uA
I_{GSS}	Gate-Body Leakage Current	V_{DS}=0V,V_{GS}=±20V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250uA	1.2	1.8	2.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V,I_D=20A	--	33	40	mΩ
		V_{GS}=4.5V,I_D=15A	--	36	47	mΩ
V_{SD}	Forward Voltage	I_S=4A,V_{GS}=0V	--	--	1.1	V
Dynamic Parameters						
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=30V f=1MHZ	--	1108	--	pF
C_{oss}	Output Capacitance		--	68	--	pF
C_{rss}	Reverse Transfer Capacitance		--	42	--	pF
Switching Parameters						
Q_g	Total Gate Charge	V_{DS}=30V,I_D=10A V_{GS}=10V	--	28	--	nC
Q_{gs}	Gate-Source Charge		--	3.8	--	nC
Q_{gd}	Gate-Drain Charge		--	4.7	--	nC
$t_{D(on)}$	Turn-on Delay Time	V_{DS}=30V I_D=1A,R_G=6Ω, V_{GS}=10V	--	6	--	nS
t_r	Turn-on Rise Time		--	22	--	nS
$t_{D(off)}$	Turn-off Delay Time		--	46	--	nS
t_f	Turn-off Fall Time		--	21	--	nS

A. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.

B. $R_{\theta JA}$ 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. $R_{\theta JC}$ is guaranteed by design, while $R_{\theta JA}$ is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper

Typical Characteristics

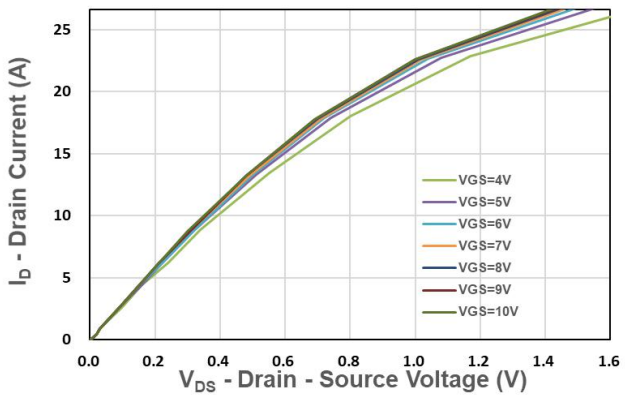


Figure 1. Output Characteristics

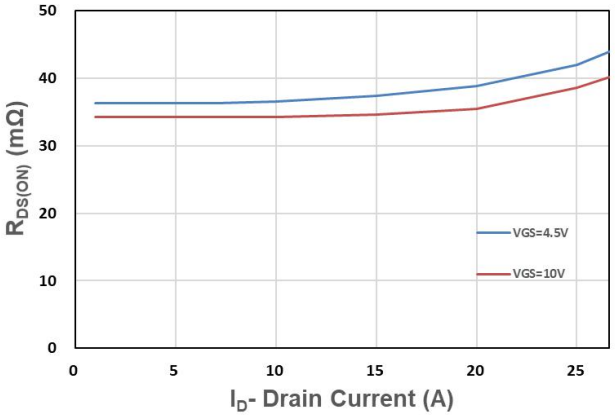


Figure 2. On−Resistance vs. ID

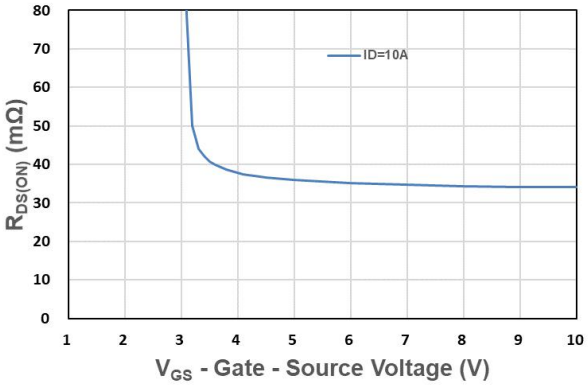


Figure 3. On−Resistance vs. VGS

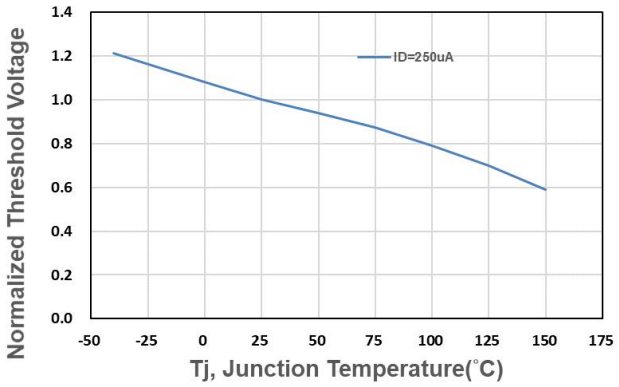


Figure 4. Gate Threshold Voltage

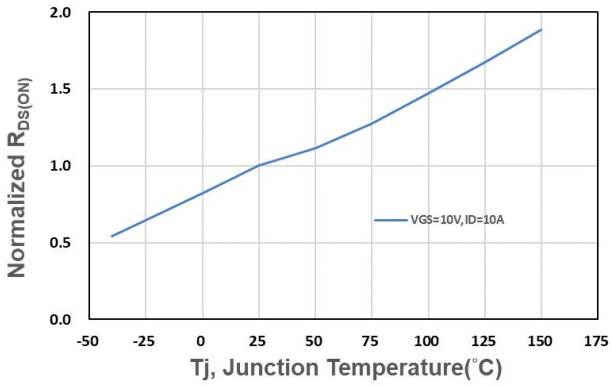


Figure 5. Drain-Source On Resistance

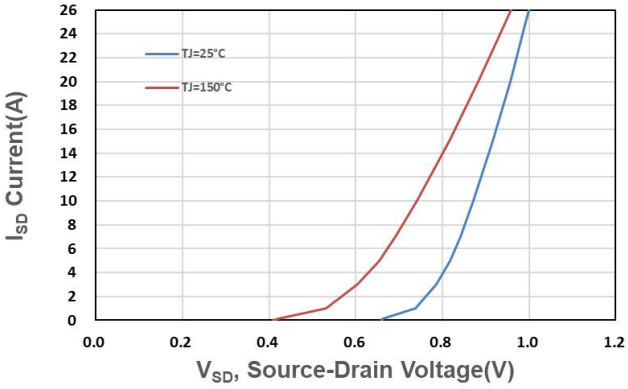


Figure 6. Source-Drain Diode Forward

Typical Characteristics

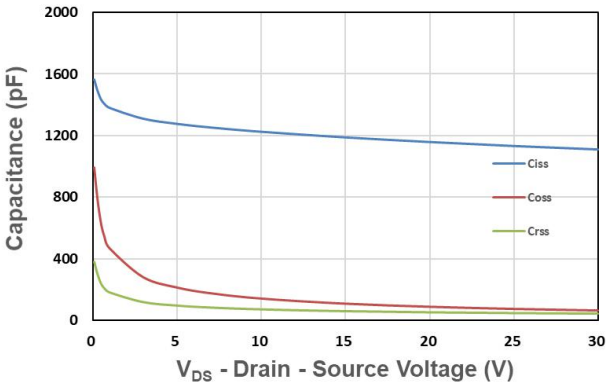


Figure 7. Capacitance

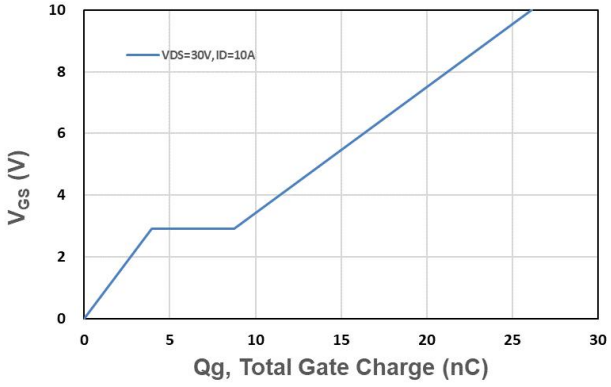


Figure 8. Gate Charge Characteristics

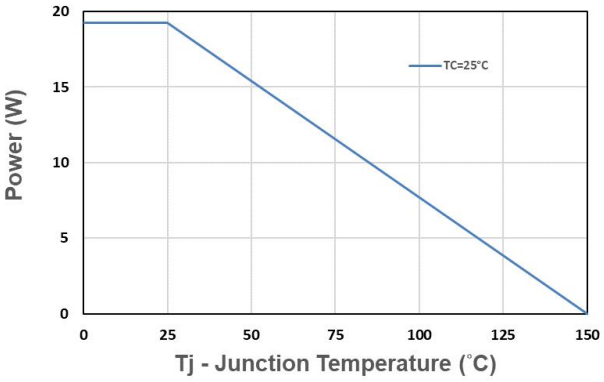


Figure 9. Power Dissipation

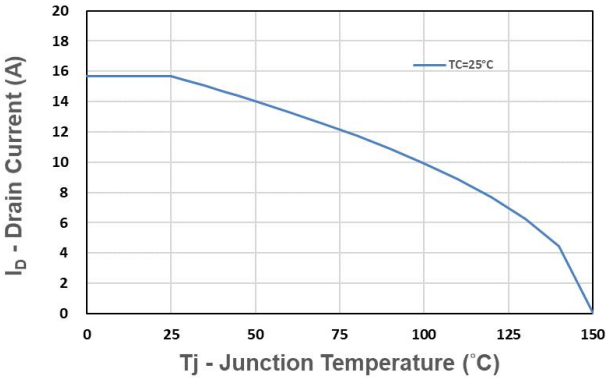


Figure 10. Drain Current

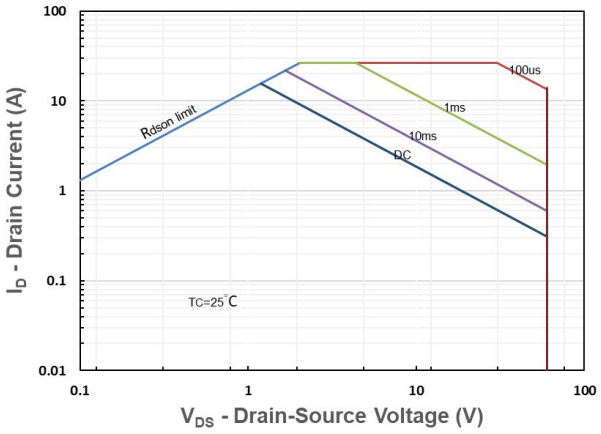


Figure 11. Safe Operating Area

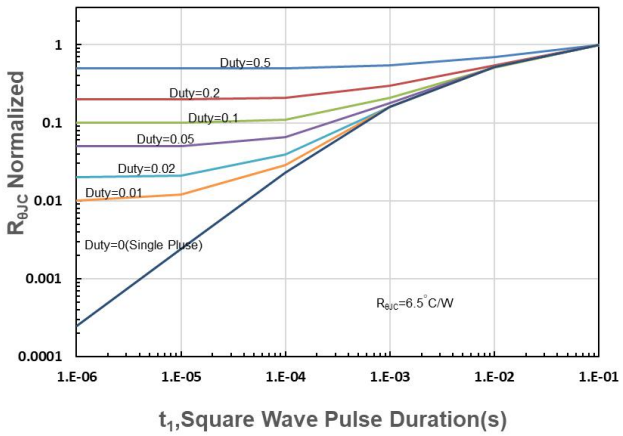
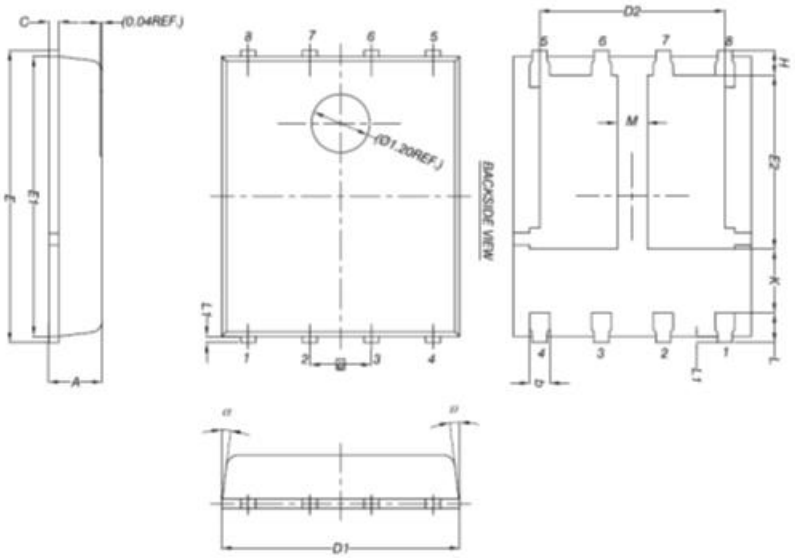


Figure 12. RθJC Transient Thermal Impedance

PDFN5X6-8L Package Information



COMMON DIMENSIONS		
UNITS:MILLIMETERS		
SYMBOL	MIN	MAX
A	0.90	1.10
b	0.33	0.51
C	0.20	0.30
D1	4.80	5.00
D2	3.61	3.96
E	5.90	6.10
E1	5.70	5.80
E2	3.38	3.78
e	1.27 BSC	
H	0.41	0.61
K	1.10	—
L	0.51	0.71
L1	0.06	0.20
M	0.50	—
α	0°	12°