

40V Dual N-Channel Mosfet

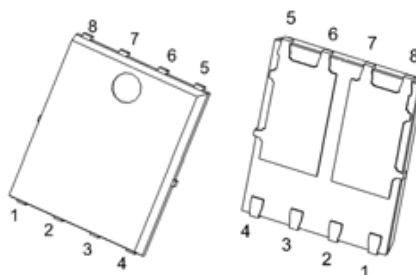
FEATURES

- $R_{DS(ON)} \leq 9.7m\Omega$ (7m Ω Typ.)
@ $V_{GS}=10V$
- $R_{DS(ON)} \leq 23m\Omega$ (10m Ω Typ.)
@ $V_{GS}=4.5V$
- AEC Q101 qualified
- Green Product (RoHS compliant)
- 100% UIS TEST

APPLICATIONS

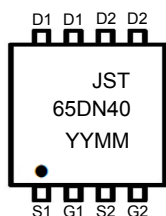
- Automotive Lighting
- Automotive Windows
- Power Management
- PWM Applications

PDFN5*6-8L



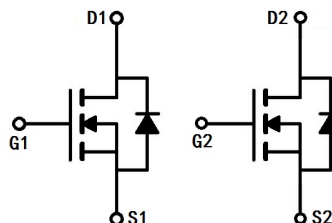
1: S1 3: S2 5: D2 7: D1
2: G1 4: G2 6: D2 8: D1

MARKING



YYMM:Date Code(year & month)

N-CHANNEL MOSFET



MAXIMUM RATINGS (Tc=25°C unless otherwise noted)

Symbol	Parameter		Limit.	Units
V_{DSS}	Drain-Source Voltage		40	V
V_{GSS}	Gate-Source Voltage		± 20	V
I_D	Continuous Drain Current @ $V_{GS}=10V$ note1	$T_C = 25^\circ C$	45	A
		$T_C = 100^\circ C$	32	A
I_{DM}	Pulsed Drain Current note2		150	A
E_{AS}	Single Pulsed Avalanche Energy note3		100	mJ
P_D	Power Dissipation	$T_C = 25^\circ C$	42	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		3.5	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	$^\circ C$

MOSFET ELECTRICAL CHARACTERISTICS T_c=25 °C unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	40	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 40V, V _{GS} = 0V, T _J = 25°C	-	-	1	μA
I _{GSS}	Gate to Body Leakage Current	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1.0	1.5	2.5	V
R _{DS(on)}	Static Drain-Source On-Resistance ^{note4}	V _{GS} = 10V, I _D = 20A	-	7	9.7	mΩ
		V _{GS} = 4.5V, I _D = 10A	-	10	23	
Dynamic Characteristics ^{note5}						
C _{iss}	Input Capacitance	V _{DS} = 20V, V _{GS} = 0V f = 1.0MHz	-	750	-	pF
C _{oss}	Output Capacitance		-	185	-	pF
C _{rss}	Reverse Transfer Capacitance		-	87	-	pF
Q _g	Total Gate Charge	V _{DS} = 20V, I _D = 20A V _{GS} = 10V	-	12	-	nC
Q _{gs}	Gate-Source Charge		-	3.6	-	nC
Q _{gd}	Gate-Drain(“Miller”) Charge		-	1.7	-	nC
Switching Characteristics ^{note5}						
t _{d(on)}	Turn-On Delay Time	V _{GS} = 10V, V _{DS} = 20V R _G = 3Ω, I _D = 30A	-	7.6	-	ns
t _r	Turn-On Rise Time		-	5.8	-	ns
t _{d(off)}	Turn-Off Delay Time		-	20.6	-	ns
t _f	Turn-Off Fall Time		-	5.8	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _{SD} = 20A T _J = 25°C	-	-	1.2	V

Notes:1. T_c=25 °C Limited only by maximum temperature allowed. Calculated continuous current based on maximum allowable junction temperature.

2. PW≤10μs, Duty cycle≤1%

3. EAS condition T_J=25 °C, V_D=20V, V_G=10V, I_D=20A, L=0.5mH

4. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 2%

5. Guaranteed by design, not subject to production testing

TYPICAL PERFORMANCE CHARACTERISTICS

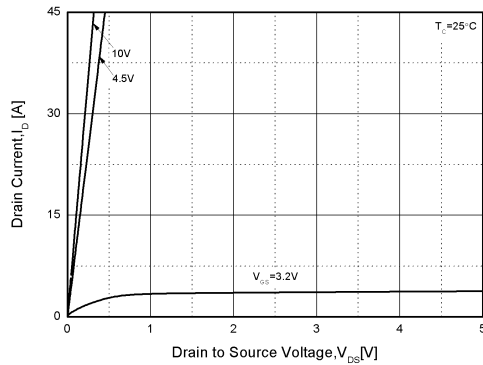


Figure1. Output Characteristics

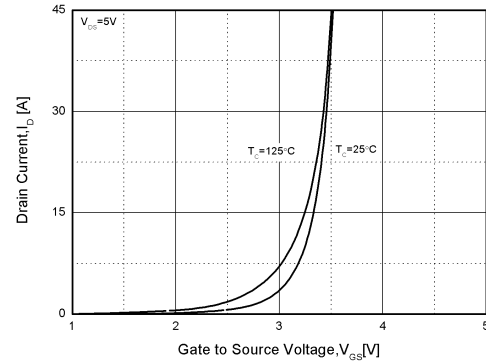


Figure2. Transfer Characteristics

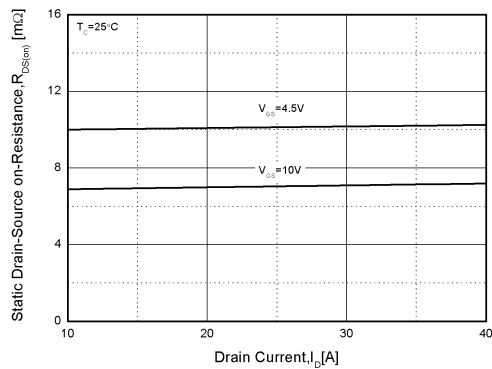


Figure3. Rdson-Drain Current

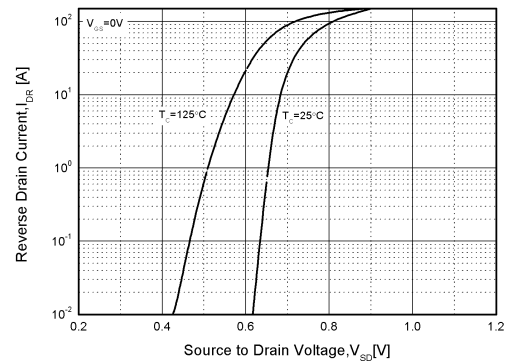


Figure4. Typical Source-Drain Diode Forward Voltage

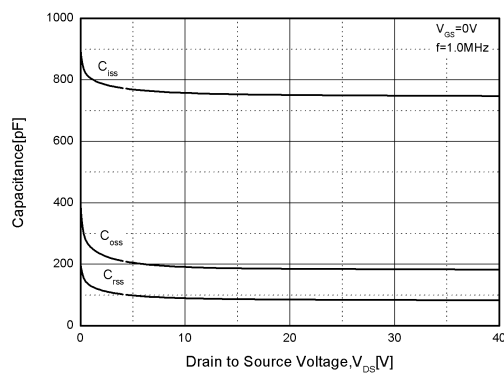


Figure5. Capacitance Characteristics

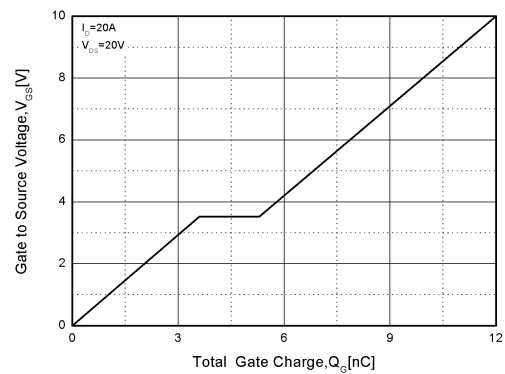


Figure6. Gate Charge

TYPICAL PERFORMANCE CHARACTERISTICS (cont.)

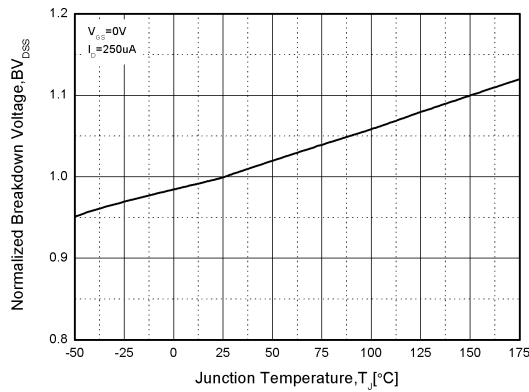


Figure7. Normalized Breakdown Voltage vs. Temperature

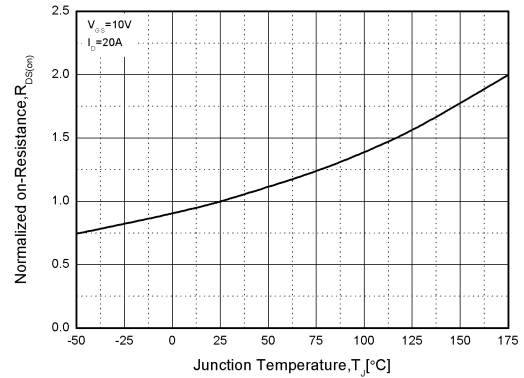


Figure8. Normalized on Resistance vs. Temperature

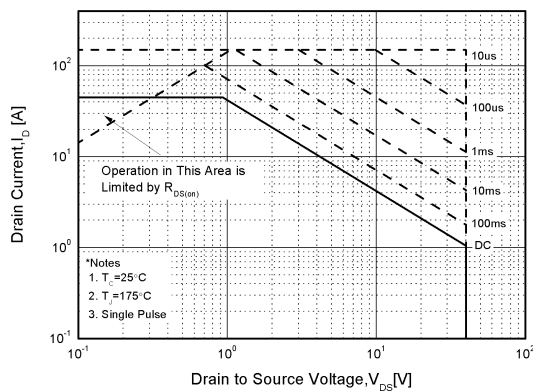


Figure9. Safe Operation Area

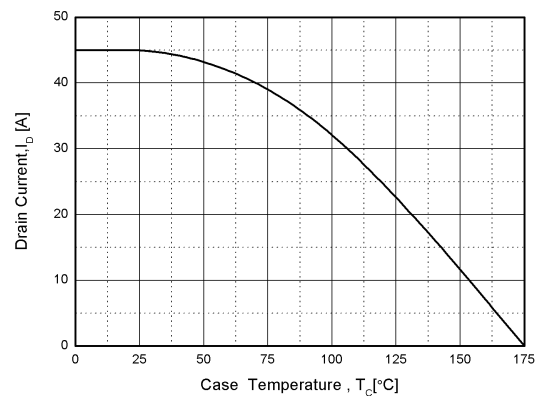


Figure10. Drain Current vs. Case Temperature

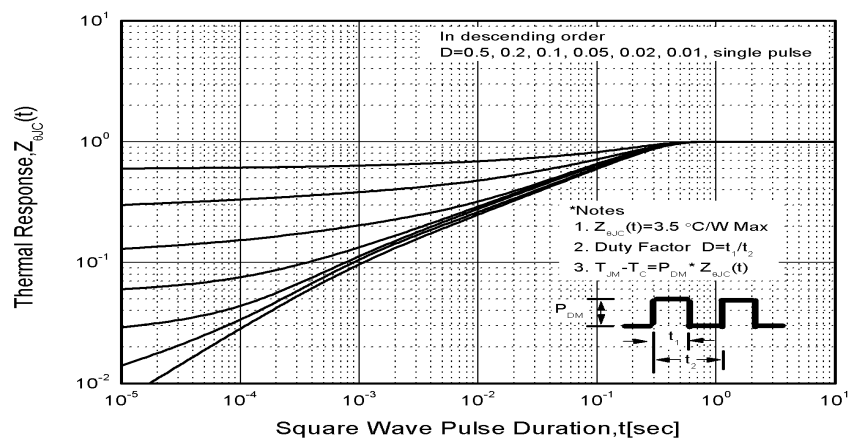
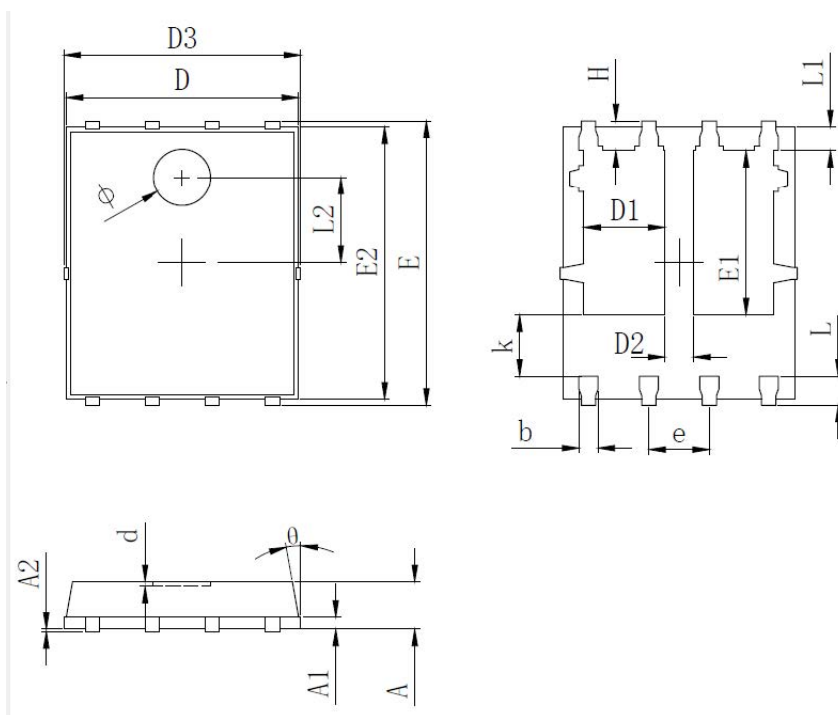


Figure11. Transient Thermal Response Curve

PDFN5*6-8L-A PACKAGE OUTLINE DRAWING



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.900	1.000	1.100
A1	0.254 REF.		
A2	0~0.05		
D	4.824	4.900	4.976
D1	1.605	1.705	1.805
D2	0.500	0.600	0.700
D3	4.924	5.000	5.076
E	5.924	6.000	6.076
E1	3.375	3.475	3.575
E2	5.674	5.750	5.826
b	0.350	0.400	0.450
e	1.270 TYP.		
L	0.534	0.610	0.686
L1	0.424	0.500	0.576
L2	1.800 REF.		
k	1.190	1.290	1.390
H	0.549	0.625	0.701
θ	8°	10°	12°
Φ	1.100	1.200	1.300
d			0.100