

General Description

These N-channel MOSFET are produced using advanced MagnaChip's MOSFET Technology, which provides low on-state resistance, high switching performance and excellent quality.

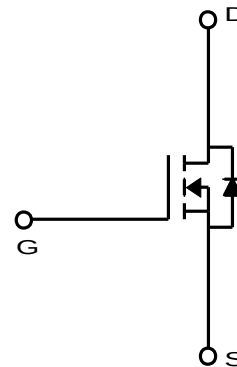
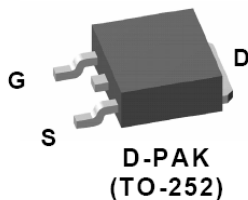
These devices are suitable device for SMPS, high Speed switching and general purpose applications.

Features

- $V_{DS} = 250V$
- $I_D = 10.2A$
- $R_{DS(ON)} \leq 0.28\Omega$ @ $V_{GS} = 10V$

Applications

- Power Supply
- Motor Control
- High Current, High Speed Switching



Absolute Maximum Ratings ($T_a = 25^\circ C$)

Characteristics		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	250	V
Gate-Source Voltage		V_{GSS}	± 30	V
Continuous Drain Current	$T_C = 25^\circ C$	I_D	10.2	A
	$T_C = 100^\circ C$		6.4	A
Pulsed Drain Current ⁽¹⁾		I_{DM}	40.8	A
Power Dissipation	$T_C = 25^\circ C$	P_D	69.4	W
	Derivate above $25^\circ C$		0.56	W/ $^\circ C$
Peak Diode Recovery dv/dt ⁽³⁾		dv/dt	4.5	V/ns
Repetitive Avalanche Energy ⁽¹⁾		E_{AR}	6.94	mJ
Avalanche current ⁽¹⁾		I_{AR}	10.2	A
Single Pulse Avalanche Energy ⁽⁴⁾		E_{AS}	550	mJ
Junction and Storage Temperature Range		T_J, T_{stg}	-55~150	$^\circ C$

Thermal Characteristics

Characteristics	Symbol	Rating	Unit
Thermal Resistance, Junction-to-Ambient ⁽¹⁾	$R_{\theta JA}$	110	$^\circ C/W$
Thermal Resistance, Junction-to-Case ⁽¹⁾	$R_{\theta JC}$	1.8	

Ordering Information

Part Number	Temp. Range	Package	Packing	RoHS Status
MDD14N25CRH	-55~150°C	D-pak	Reel & Tape	Halogen Free

Electrical Characteristics (Ta =25°C)

Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D = 250\mu A, V_{GS} = 0V$	250	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	-	4.0	
Drain Cut-Off Current	I_{DSS}	$V_{DS} = 250V, V_{GS} = 0V$	-	-	1	μA
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 30V, V_{DS} = 0V$	-	-	100	nA
Drain-Source ON Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 5.1 A$	-	0.22	0.28	Ω
Forward Transconductance	g_{fs}	$V_{DS} = 30V, I_D = 5.1A$	-	8.5	-	S
Dynamic Characteristics						
Total Gate Charge	Q_g	$V_{DS} = 200V, I_D = 14.0A, V_{GS} = 10V$	-	20.0	-	nC
Gate-Source Charge	Q_{gs}		-	4.5	-	
Gate-Drain Charge	Q_{gd}		-	8.9	-	
Input Capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz$	-	741	-	pF
Reverse Transfer Capacitance	C_{rss}		-	15	-	
Output Capacitance	C_{oss}		-	142	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 125V, I_D = 14.0A, R_G = 25\Omega^{(3)}$	-	13	-	ns
Rise Time	t_r		-	42	-	
Turn-Off Delay Time	$t_{d(off)}$		-	44	-	
Fall Time	t_f		-	28	-	
Drain-Source Body Diode Characteristics						
Maximum Continuous Drain to Source Diode Forward Current	I_S		-	-	10.2	A
Source-Drain Diode Forward Voltage	V_{SD}	$I_S = 10.2A, V_{GS} = 0V$	-	-	1.4	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F = 14.0A, dI/dt = 100A/\mu s^{(3)}$	-	174	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	1.0	-	μC

Note :

1. Pulse width is based on $R_{\theta JC}$ & $R_{\theta JA}$ and the maximum allowed junction temperature of 150°C.
2. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$, pulse width limited by junction temperature $T_{J(MAX)} = 150^\circ C$.
3. $I_{SD} \leq 10.2A$, $di/dt \leq 300A/\mu s$, $V_{DD} \leq BV_{dss}$, $R_g = 25\Omega$, Starting $T_J = 25^\circ C$
4. $L = 8.5mH$, $I_{AS} = 10.2A$, $V_{DD} = 50V$, $R_g = 26\Omega$, Starting $T_J = 25^\circ C$

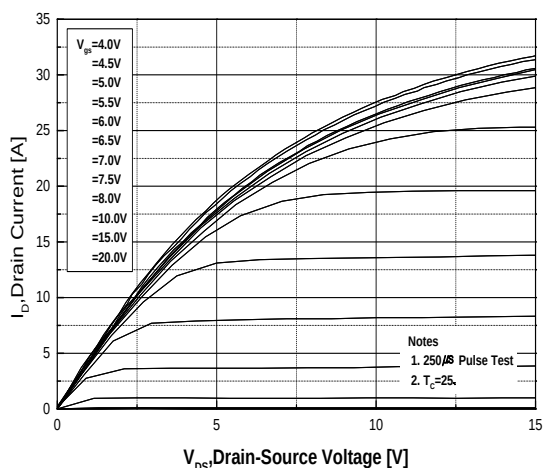


Fig.1 On-Region Characteristics

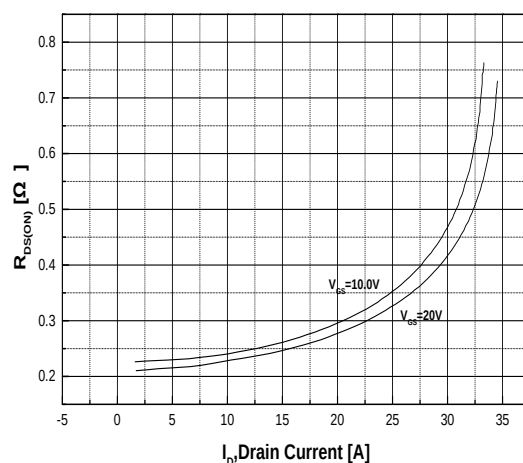


Fig.2 On-Resistance Variation with Drain Current and Gate Voltage

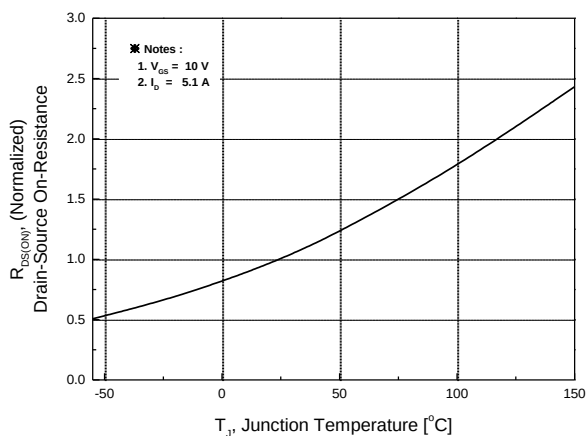


Fig.3 On-Resistance Variation with Temperature

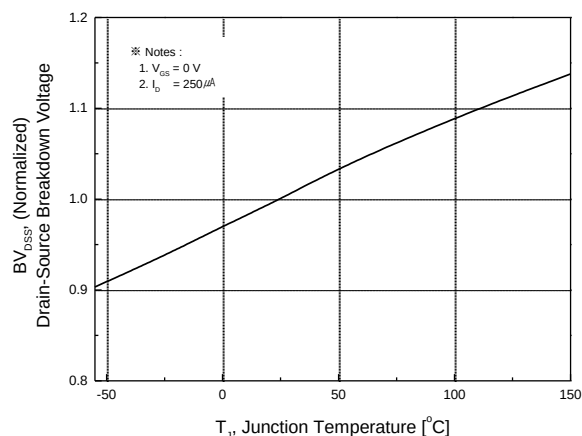


Fig.4 Breakdown Voltage Variation vs. Temperature

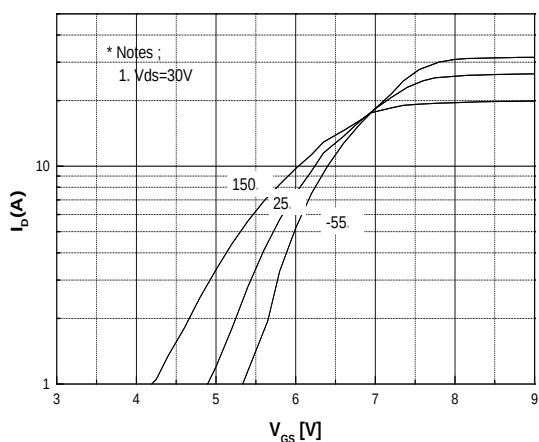


Fig.5 Transfer Characteristics

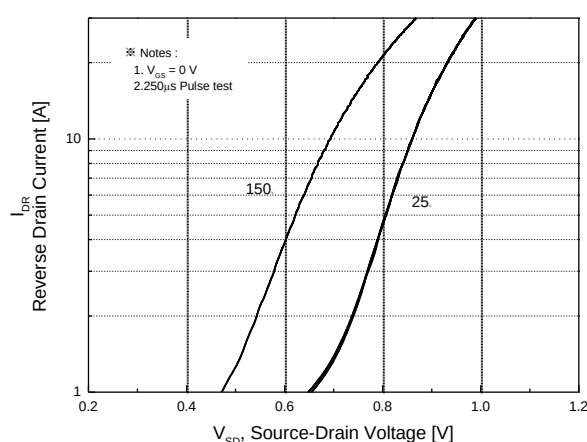
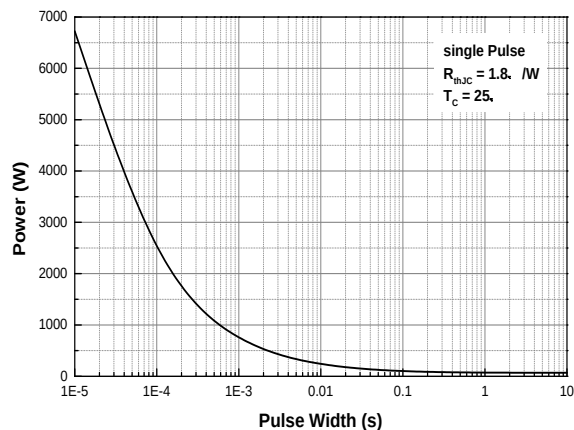
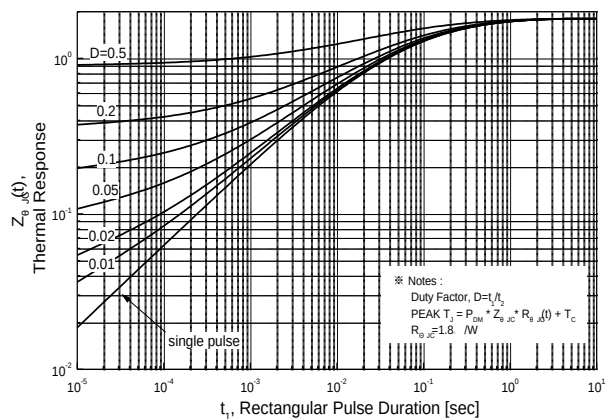
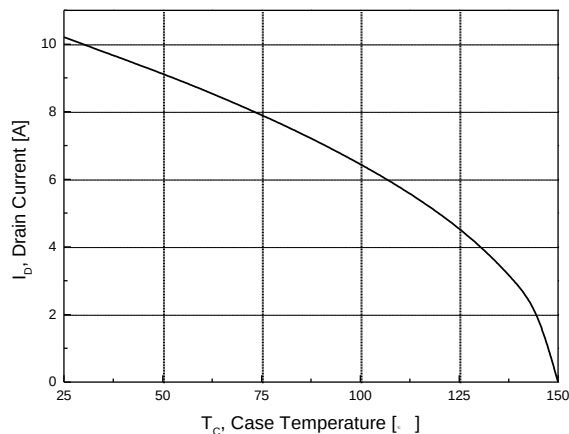
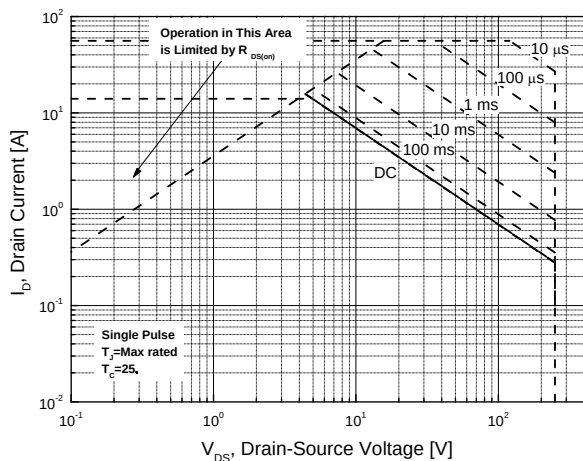
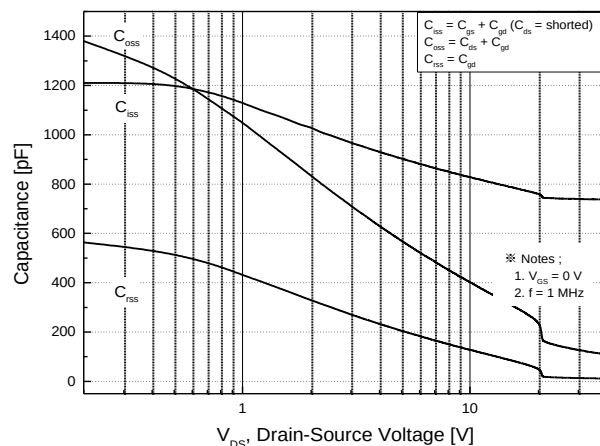
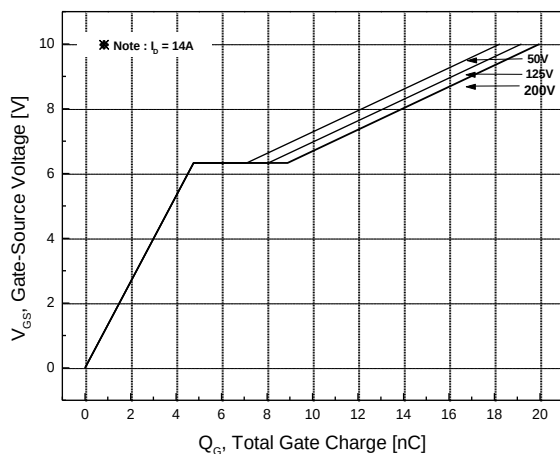


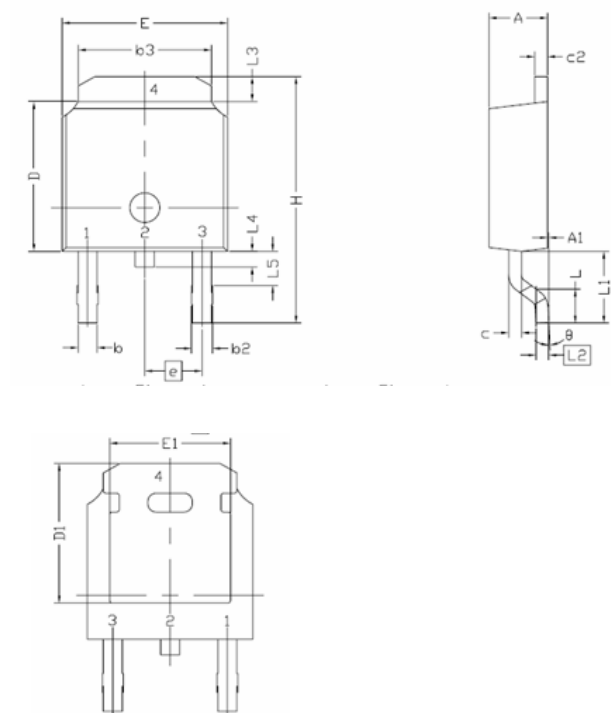
Fig.6 Body Diode Forward Voltage Variation with Source Current and Temperature



Physical Dimension

D-PAK, 3L

Dimensions are in millimeters, unless otherwise specified



Symbol	Min.	Nom.	Max.
E	6,35	-	6,73
L	1,40	1,52	1,78
L1	2,74 REF		
L2	0,508 BCS		
L3	0,89	-	1,27
L4	-	-	1,02
L5	1,14	-	1,52
D	5,97	6,10	6,22
H	9,40	-	10,41
b	0,64	-	0,89
b2	0,76	-	1,14
b3	4,95	-	5,46
e	2,286 BSC		
A	2,18	-	2,39
A1	-	-	0,13
c	0,46	-	0,61
c2	0,46	-	0,89
D1	5,21	-	-
E1	4,32	-	-
Ø	0,00	-	10,00

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