General Features

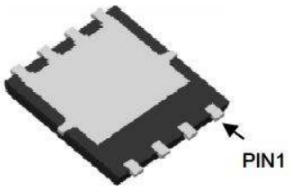
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation
- Special process technology for high ESD capability

Product Summary

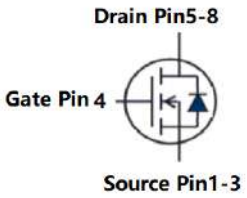
V_{DS}	100	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	3.7	mΩ
I_D	90	A

Application

- Automotive applications
- Hard switched and high frequency circuits
- Uninterruptible power supply



DFN5x6-8L



Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter	Condition	Value	Unit
V_{DS}	Drain-Source Voltage		100	V
I_D	Continuous Drain Current[1]	T_C=25℃	90	A
		T_C=70℃	48	A
V_{GS}	Gate-Source Voltage		±20	V
I_{DM}	Pulsed Drain Current[2]	T_C=25℃	360	A
P_D	Total Power Dissipation	T_C=25℃	60	W
T_{STG}	Storage Temperature Range		-55 to 150	℃
T_J	Operating Junction Temperature		-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	--	63	℃/W
$R_{\theta Jc}$	Thermal Resistance-Junction to Case	--	1.3	

Electrical Characteristics (T_J=25℃ unless otherwise specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
Static Characteristic						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	100	--	--	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	2	3.0	4	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=80V, V_{GS}=0V	--	--	1	uA
		V_{DS}=48V, V_{GS}=0V	--	--	100	
I_{GSS}	Gate -Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	--	--	±100	nA -
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V, I_D=20A	-	3.7	4.5	mΩ
Dynamic Characteristic						
C_{iss}	Input Capacitance	V_{DS}=40V,V_{GS}=0V,f=1MHz	--	2890	--	pF
C_{oss}	Output Capacitance		--	881	--	
C_{rss}	Recerse Transfer Capacitance		--	13.2	--	
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=40V,V_{GS}=10V , R_G=2Ω, I_D=20A	--	16	--	nS
t_r	Turn-On Rise Time		--	13	--	
$t_{d(off)}$	Turn-off Delay Time		--	28	--	
t_f	Turn-Off Fall Time		--	7.5	--	
Gate Charge Characteristic						
Qg	Total Gate Charge	V_{DD}=30V, V_{GS}=10V, I_D=30A	--	23	--	nC
Qgs	Gate-Source Charge		--	5.2	--	
Qgd	Gate-Drain Charge		--	7.3	--	
Reverse diode Characteristic						
V_{SD}	forward on voltage	I_{SD}=20A, V_{GS}=0V	--	--	1.2	V
t_{rr}	Reverse Recovery Time	V_R=0V,I_F=20A, DI_F/dt=100A/uS	--	46	--	nS
Q_{rr}	Reverse Recovery Charge		--	182	--	nC

Typical Electrical and Thermal Characteristics (Curves)

Figure 2. Safe operating area

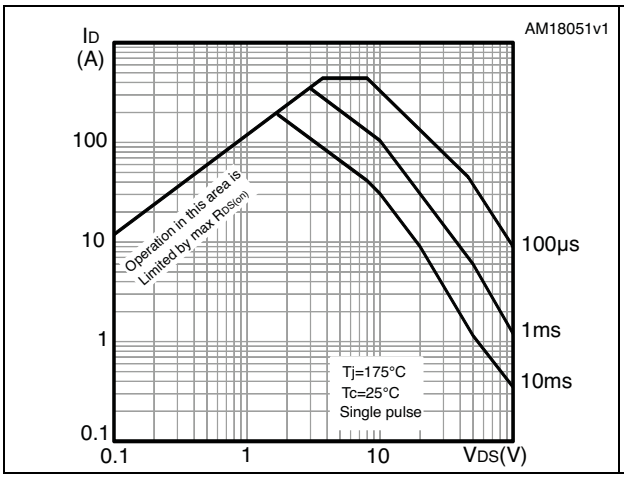


Figure 3. Thermal impedance

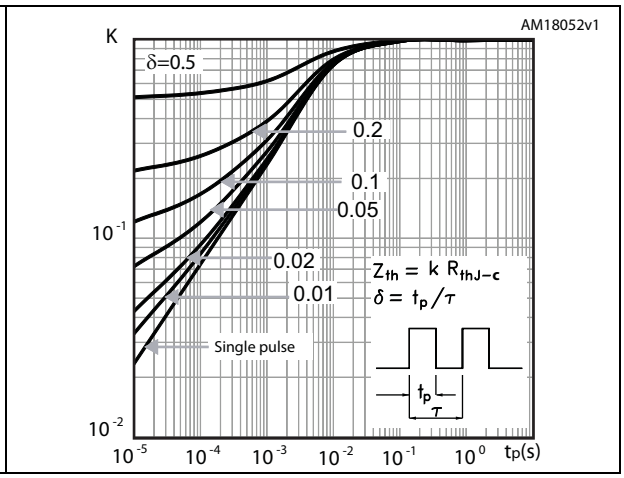


Figure 4. Output characteristics

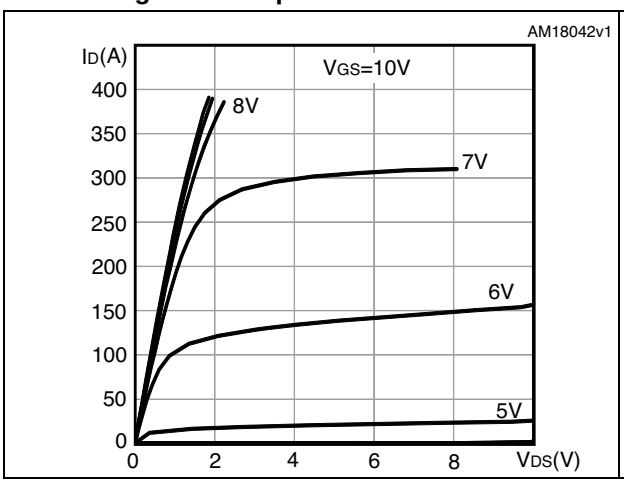


Figure 5. Transfer characteristics

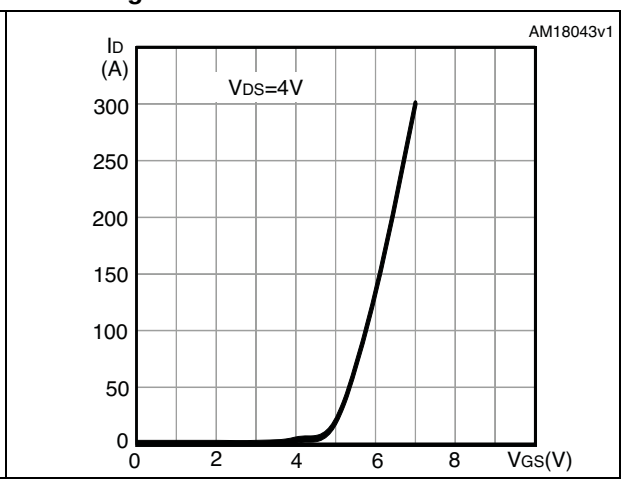


Figure 6. Gate charge vs gate-source voltage

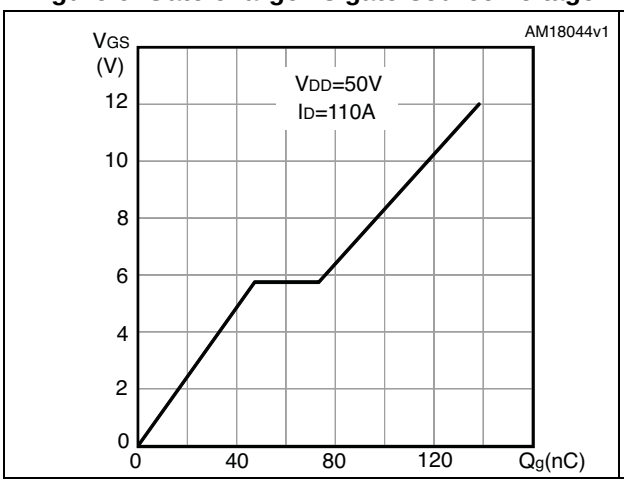


Figure 7. Static drain-source on-resistance

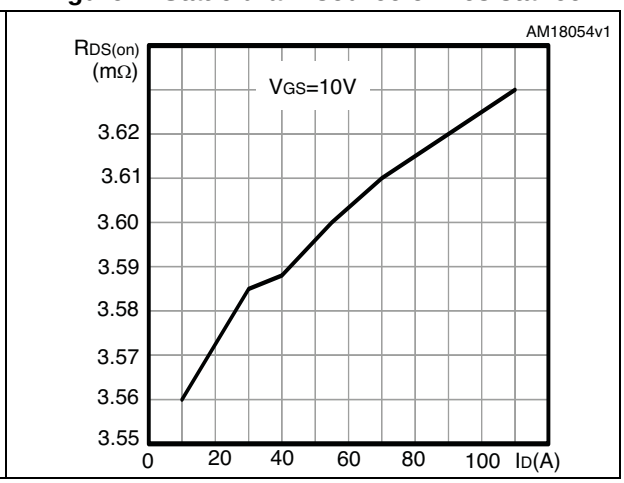


Figure 8. Capacitance variations

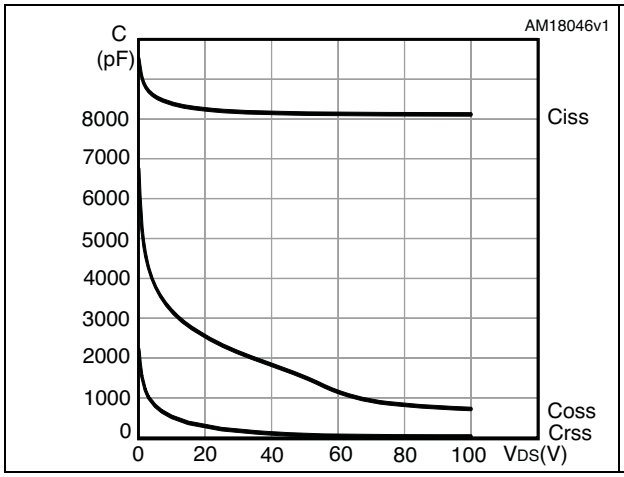


Figure 9. Normalized gate threshold voltage vs temperature

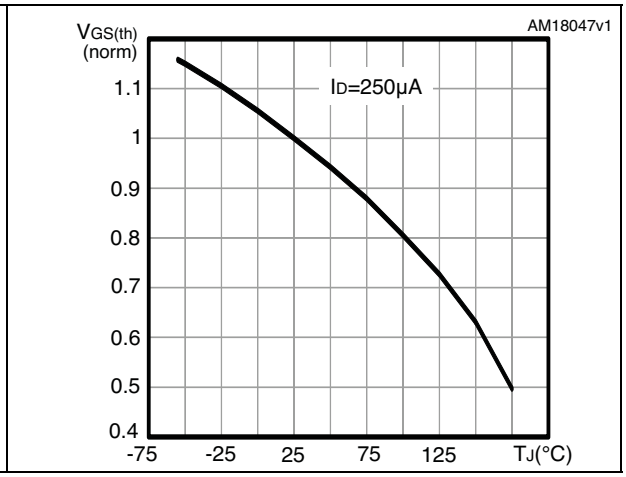


Figure 10. Normalized on-resistance vs temperature

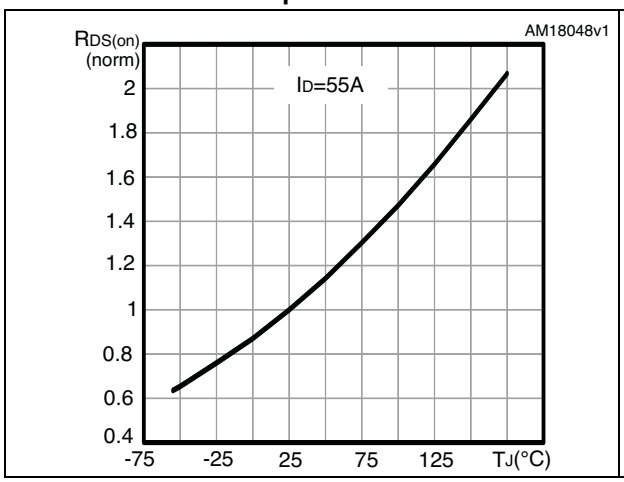


Figure 11. Normalized V_{DS} vs temperature

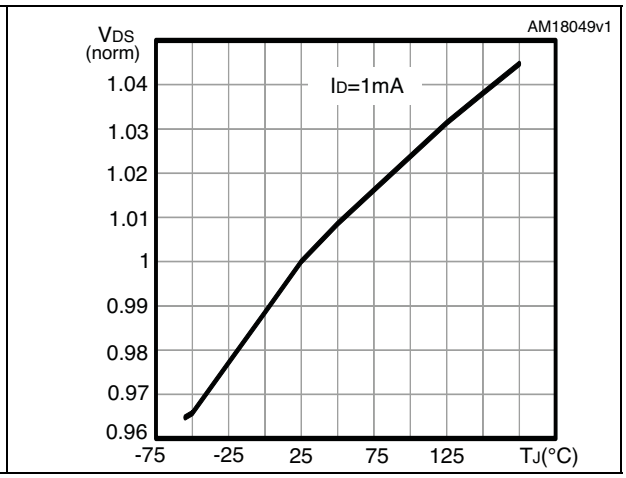
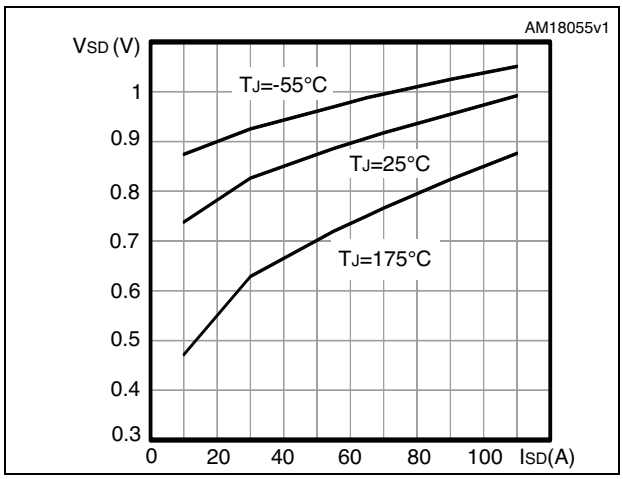


Figure 12. Source-drain diode forward characteristics



Test circuits

Figure 13. Switching times test circuit for resistive load

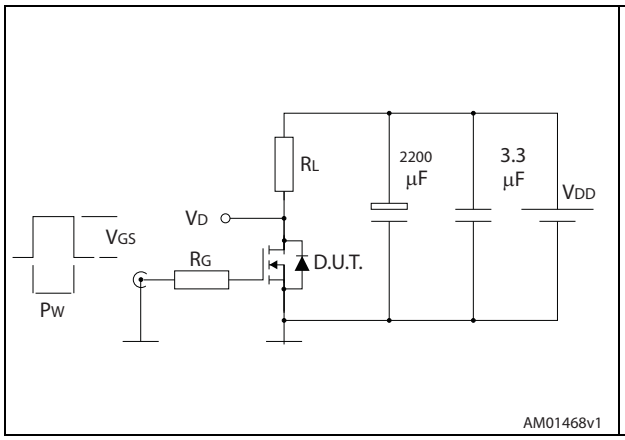


Figure 14. Gate charge test circuit

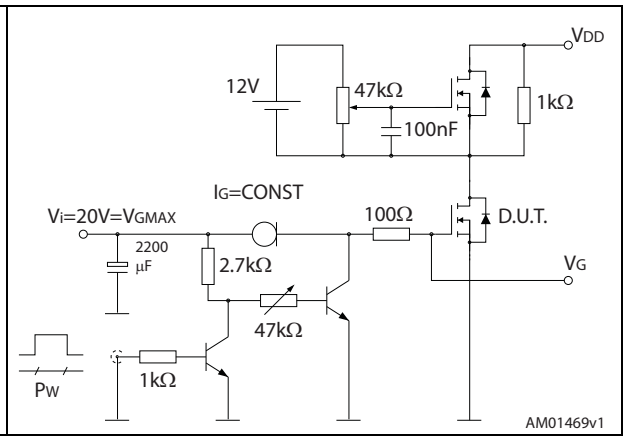


Figure 15. Test circuit for inductive load switching and diode recovery times

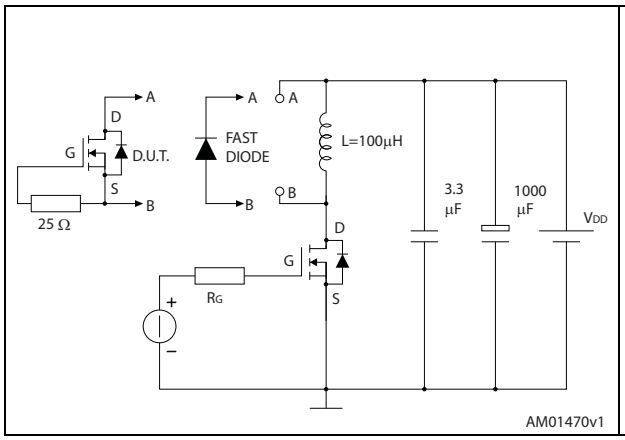


Figure 16. Unclamped inductive load test circuit

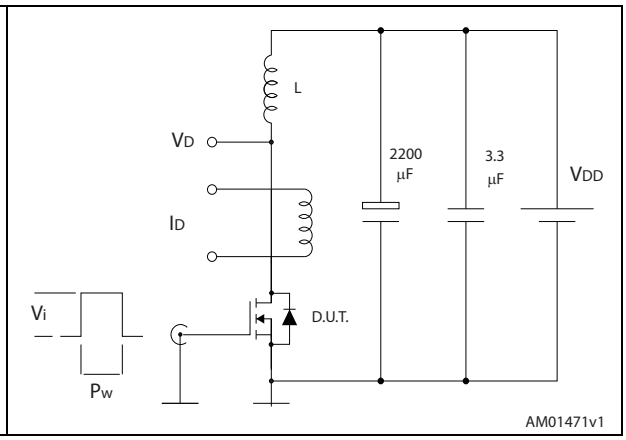


Figure 17. Unclamped inductive waveform

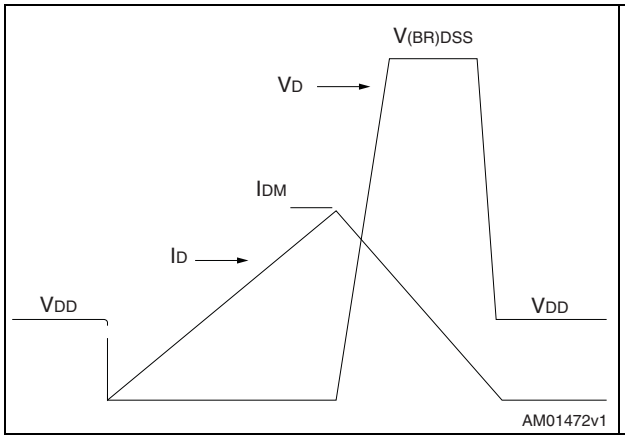
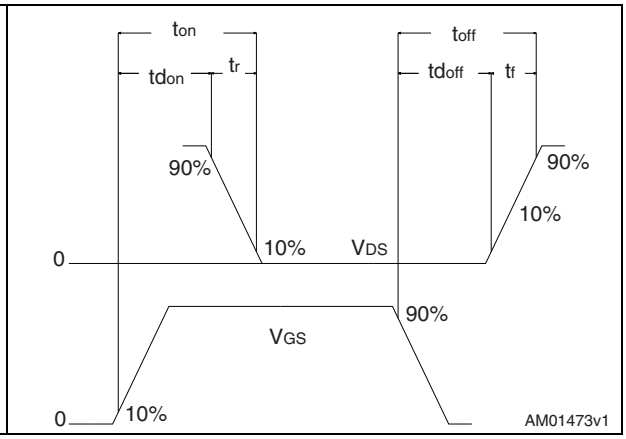
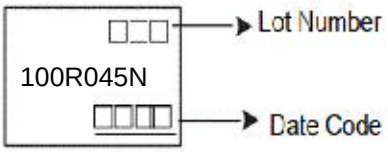


Figure 18. Switching time waveform

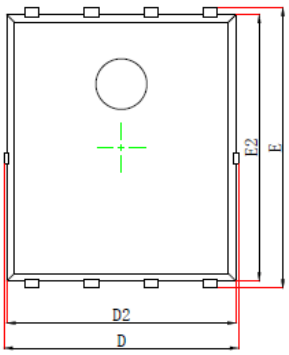


Ordering and Marking Information

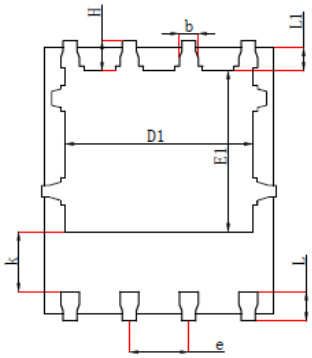
Ordering Device No	Marking	Package	Packing	Quantity
JMN100R045NQ-R	100R045N	DFN5*6-8	Tape&Reel	4000

PACKAGE	MARKING
DFN5*6-8	

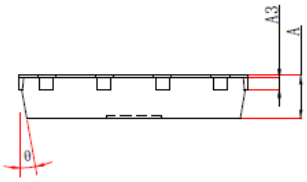
DFN5*6, 8 Leads



Top View



Bottom View



Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°

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