

STB80NF55L-08T4-VB Datasheet

N-Channel 60 V (D-S) MOSFET

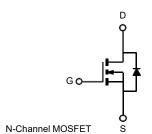
PRODUCT SUMMARY					
V _{DS}	60	V			
R _{DS(on)} V _{GS} = 10 V	4	mΩ			
I _D	150	Α			
Configuration	Single				

FEATURES

- Trench power MOSFET
- Package with low thermal resistance
- 100 % R_g and UIS tested







ABSOLUTE MAXIMUM RATINGS (T _C = 25 °C, unless otherwise noted)					
PARAMETER	SYMBOL	LIMIT	UNIT		
Drain-Source Voltage	V _{DS}	60	V		
Gate-Source Voltage	V _{GS}	± 20	V		
Continuous Drain Current	T _C = 25 °C ^a	_	150		
Continuous Diain Current	T _C = 125 °C	l _D	65		
Continuous Source Current (Diode Conduction) ^a	Is	120	A		
Pulsed Drain Current ^b		I _{DM}	350		
Single Pulse Avalanche Current	L = 0.1 mH	I _{AS}	65		
Single Pulse Avalanche Energy	L = 0.111111	E _{AS}	211	mJ	
Maximum Power Dissipation ^b	T _C = 25 °C	P _D	220	W	
iviaximum i owei Dissipation -	T _C = 125 °C	I D	70	V V	
Operating Junction and Storage Temperature Rang	T _J , T _{stg}	-55 to +175	°C		

THERMAL RESISTANCE RATINGS						
PARAMETER		SYMBOL	LIMIT	UNIT		
Junction-to-Ambient	PCB Mount c	R _{thJA}	40	°C/W		
Junction-to-Case (Drain)		R _{thJC}	0.65	C/VV		

Notes

- a. Package limited.
- b. Pulse test; pulse width \leq 300 µs, duty cycle \leq 2 %.
- c. When mounted on 1" square PCB (FR4 material).

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PARAMETER	SYMBOL	rwise noted) TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT
Static							
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0, I _D = 250 μA		60	-	-	.,
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} =	V _{GS} , I _D = 250 μA	2.0		4.0	V
Gate-Source Leakage	I _{GSS}	V _{DS} =	0 V, V _{GS} = ± 20 V	-	-	± 100	nA
		V _{GS} = 0 V	V _{DS} = 60 V	-	-	1	1
Zero Gate Voltage Drain Current	I _{DSS}	V _{GS} = 0 V	V _{DS} = 60 V, T _J = 125 °C	-	-	50	μA
		V _{GS} = 0 V	V _{DS} = 60 V, T _J = 175 °C	-	-	250	1 .
On-State Drain Current ^a	I _{D(on)}	V _{GS} = 10 V	$V_{DS} \ge 5 \text{ V}$	120	-	-	Α
		V _{GS} = 10 V	I _D = 30 A	-	4	-	
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 10 V	I _D = 30 A, T _J = 125 °C	-	12	-	mΩ
		V _{GS} = 10 V	I _D = 30 A, T _J = 175 °C	-	15	-	
Forward Transconductance ^b	9 _{fs}	V _{DS} = 15 V, I _D = 30 A		-	94	-	S
Dynamic ^b	·	<u> </u>					
Input Capacitance	C _{iss}			-	-	7000	
Output Capacitance	C _{oss}	V _{GS} = 0 V	V _{GS} = 0 V V _{DS} = 25 V, f = 1 MHz		-	715	pF
Reverse Transfer Capacitance	C _{rss}				-	360	
Total Gate Charge ^c	Qg			-	96	145	
Gate-Source Charge	Q_{gs}	V _{GS} = 10 V	$V_{DS} = 30 \text{ V}, I_{D} = 75 \text{ A}$	-	24	-	nC
Gate-Drain Charge ^c	Q_{gd}			-	27	-	1
Gate Resistance	Rg		f = 1 MHz		1	1.7	Ω
Turn-On Delay Time ^c	t _{d(on)}	$V_{DD} = 30 \text{ V, } R_L = 0.4 \Omega$ $I_D \cong 75 \text{ A, } V_{GEN} = 10 \text{ V, } R_g = 1 \Omega$		-	16	24	
Rise Time ^c	t _r			-	14	21	ns ns
Turn-Off Delay Time ^c	t _{d(off)}			-	34	51	
Fall Time ^c	t _f			-	9	14	
Source-Drain Diode Ratings and Chara	cteristics ^b	<u> </u>					
Pulsed Current ^a	I _{SM}			-	-	450	Α
Forward Voltage	V _{SD}	I _F = 75 A, V _{GS} = 0		-	0.9	1.5	V

Notes

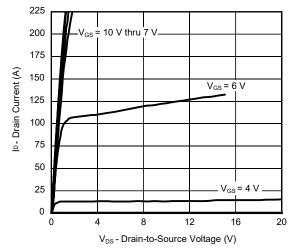
- a. Pulse test; pulse width $\leq 300~\mu s,$ duty cycle $\leq 2~\%.$ b. Guaranteed by design, not subject to production testing.
- c. Independent of operating temperature.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

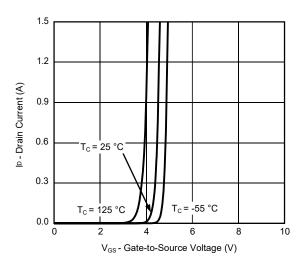
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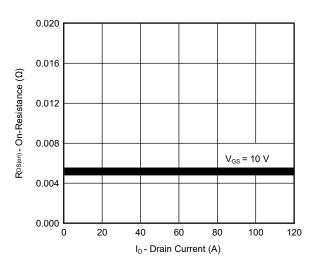
TYPICAL CHARACTERISTICS (T_A = 25 °C, unless otherwise noted)



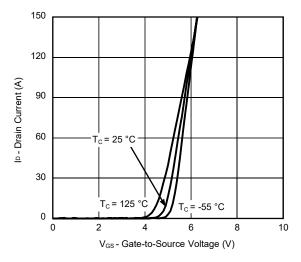




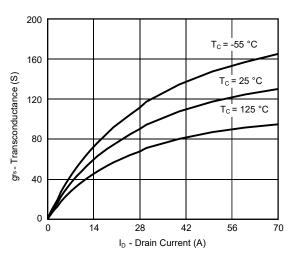
Transfer Characteristics



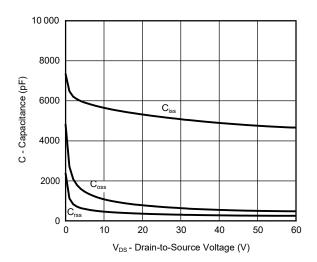
On-Resistance vs. Drain Current



Transfer Characteristics



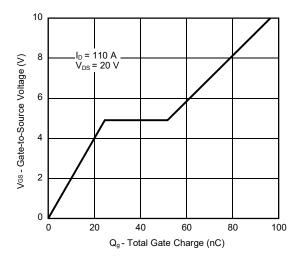
Transconductance



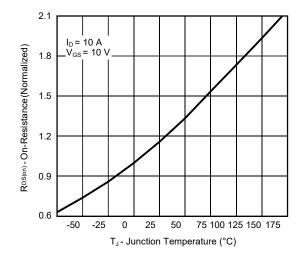
Capacitance



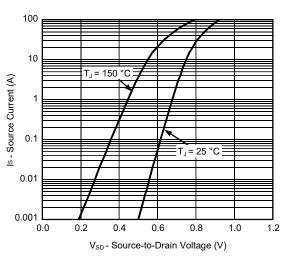
TYPICAL CHARACTERISTICS (T_A = 25 °C, unless otherwise noted)



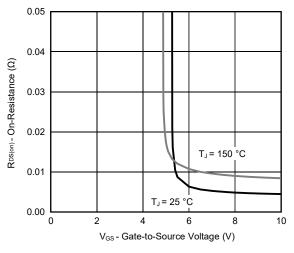
Gate Charge



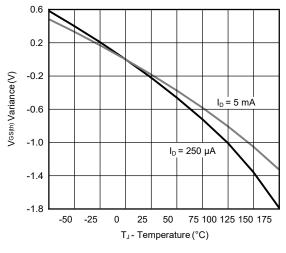
On-Resistance vs. Junction Temperature



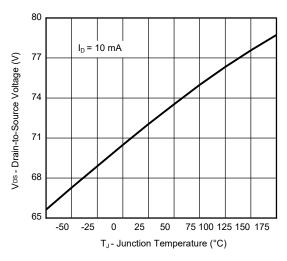
Source Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



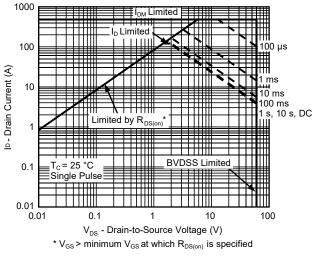
Threshold Voltage



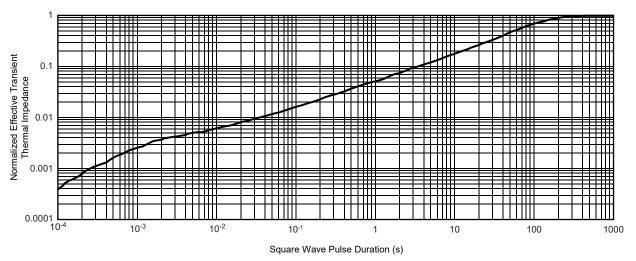
Drain Source Breakdown vs. Junction Temperature



THERMAL RATINGS (T_A = 25 °C, unless otherwise noted)



Safe Operating Area

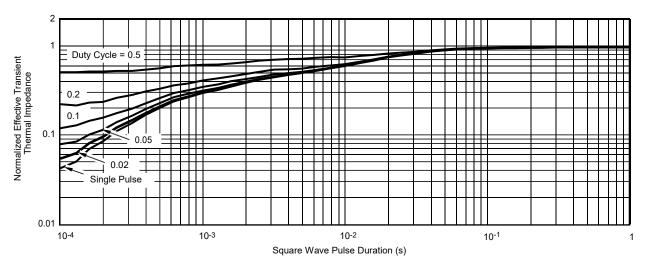


Normalized Thermal Transient Impedance, Junction-to-Ambient

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THERMAL RATINGS (T_A = 25 °C, unless otherwise noted)



Normalized Thermal Transient Impedance, Junction-to-Case

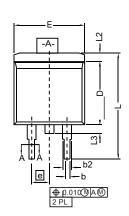
Note

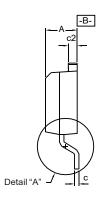
- The characteristics shown in the two graphs
 - Normalized Transient Thermal Impedance Junction-to-Ambient (25 °C)

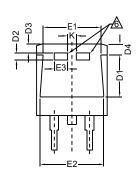
- Normalized Transient Thermal Impedance Junction-to-Case (25 °C) are given for general guidelines only to enable the user to get a "ball park" indication of part capabilities. The data are extracted from single pulse transient thermal impedance characteristics which are developed from empirical measurements. The latter is valid for the part mounted on printed circuit board - FR4, size 1" x 1" x 0.062", double sided with 2 oz. copper, 100 % on both sides. The part capabilities can widely vary depending on actual application parameters and operating conditions.



TO-263 (D²PAK): 3-LEAD

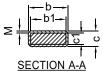








DETAIL A (ROTATED 90°)



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	C.	CTION	1	1

- 1. Plane B includes maximum features of heat sink tab and plastic.
- 2. No more than 25 % of L1 can fall above seating plane by max.
- 3. Pin-to-pin coplanarity max. 4 mils.
- 4. *: Thin lead is for SUB, SYB. Thick lead is for SUM, SYM, SQM.
- 5. Use inches as the primary measurement.

 This feature is for thick lead.

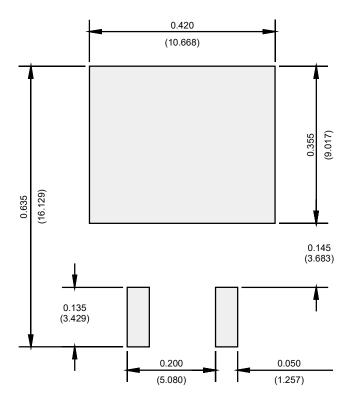
		INC	HES	MILLIMETERS			
DIM.		MIN.	MAX.	MIN.	MAX.		
Α		0.160	0.190	4.064	4.826		
	b	0.020	0.039	0.508	0.990		
	b1	0.020	0.035	0.508	0.889		
	b2	0.045	0.055	1.143	1.397		
c*	Thin lead	0.013	0.018	0.330	0.457		
"	Thick lead	0.023	0.028	0.584	0.711		
c1	Thin lead	0.013	0.017	0.330	0.431		
CI	Thick lead	0.023	0.027	0.584	0.685		
	c2	0.045	0.055	1.143	1.397		
	D	0.340	0.380	8.636	9.652		
	D1 0.220		0.240	5.588	6.096		
	D2	0.038	0.042	0.965	1.067		
	D3	0.045	0.055	1.143	1.397		
	D4	0.044	0.052	1.118	1.321		
	E	0.380	0.410	9.652	10.414		
	E1	0.245	-	6.223	-		
	E2	0.355	0.375	9.017	9.525		
	E3	0.072	0.078	1.829	1.981		
	е	0.100 BSC		2.54 BSC			
	K	0.045	0.055	1.143	1.397		
	L 0.575		0.625	14.605	15.875		
L1		0.090	0.110	2.286	2.794		
L2		0.040	0.055	1.016	1.397		
	L3	0.050	0.070	1.270	1.778		
	L4	0.010 BSC		0.254 BSC			
	М	-	0.002	-	0.050		
ECN: T12 0707 Pay K 20 San 12							

ECN: T13-0707-Rev. K, 30-Sep-13

DWG: 5843



RECOMMENDED MINIMUM PADS FOR D²PAK: 3-Lead



Recommended Minimum Pads Dimensions in Inches/(mm)



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