

DATASHEET

N-Channel Enhancement Mode Power MOSFET

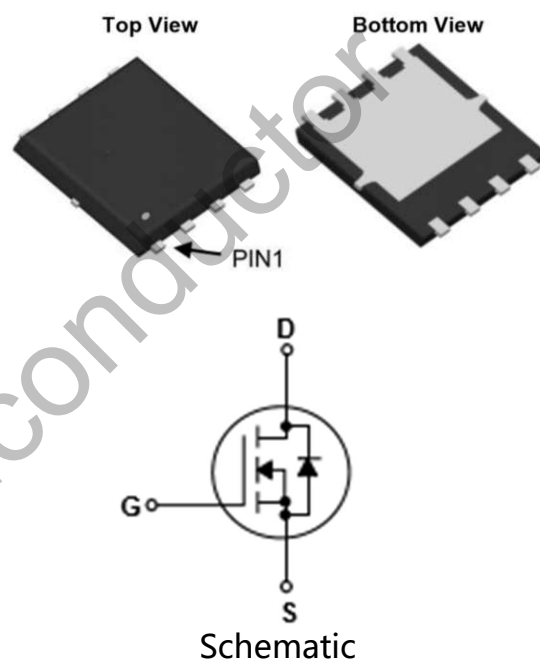
Description

This Power MOSFET is produced using advanced SGT technology. This advanced technology has been especially tailored to minimize conduction loss, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.

Features

- $V_{DS}=100V$, $I_D=85A$
- $R_{DS(ON) TYP} = 7.4m\Omega @V_{GS}=10V$
- $R_{DS(ON) TYP} = 9.3m\Omega @V_{GS}=4.5V$
- Very Low On-resistance $R_{DS(ON)}$
- Low C_{rss}
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability

PDFN5*6-8L



Applications

- Current Switch for DC/DC, AC/DC
- Power Management
- Motor Driving, Quick/Wireless Charging

100% UIS TESTED!

100% ΔV_{ds} TESTED!



Package Marking and Ordering Information

Device	Marking	Package	Packing	Reel size	Reel (pcs)	Per Carton (pcs)
100N10		PDFN5*6	Reel	13inch	5000	60000

DATASHEET

N-Channel Enhancement Mode Power MOSFET

Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Drain-source Voltage		V_{DS}	100	V
Gate-source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C=25^{\circ}\text{C}$	I_D	85	A
	$T_C=100^{\circ}\text{C}$		53	
Pulsed Drain Current($T_C=25^{\circ}\text{C}$, T_p Limited By T_{jmax}) ^(note1)		I_{DM}	333	A
Maximum Power Dissipation($T_C=25^{\circ}\text{C}$)		P_D	105	W
Avalanche energy , single Pulse($L=0.5\text{mH}$) ^(note2)		E_{AS}	177	mJ
Thermal Resistance Junction to Case		$R_{\theta JC}$	0.8	$^{\circ}\text{C/W}$
Thermal Resistance, Junction to Ambient		$R_{\theta JA}$	35	$^{\circ}\text{C/W}$
Operating Junction And Storage Temperature		T_j, T_{stg}	-55 To 150	$^{\circ}\text{C}$

* Drain current limited by maximum junction temperature.

Notes:

1. This single-pulse measurement was taken under $T_{j_Max}=150^{\circ}\text{C}$
2. This Single-pulse measurement was taken under the following condition [$L=1000\mu\text{H}$, $V_{GS}=10\text{V}$, $V_{DS}=50\text{V}$] while its value is limited by $T_{j_Max}=150^{\circ}\text{C}$.

DATASHEET

N-Channel Enhancement Mode Power MOSFET

Electrical Characteristic (TC=25°C unless otherwise noted)

Parameter	Symbol	Value			Unit	Test Condition
		Min.	Typ.	Max.		
Off Characteristic						
Drain-source breakdown voltage	BV_{DSS}	100	-	-	V	$V_{GS}=0V, I_D=250\mu A$
Zero gate voltage drain current	I_{DSS}	-	-	1	μA	$V_{DS}=100V, V_{GS}=0V$
		-	-	100	μA	$V_{DS}=100V, TC=125^{\circ}C$
Gate-source leakage current	I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 20V, V_{DS}=0V$
On Characteristics						
Gate threshold voltage	$V_{GS(th)}$	1.2	1.7	2.5	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Drain-source on-state resistance	$R_{DS(on)}$	-	7.4	8.5	m Ω	$V_{GS}=10V, I_D=20A$
Drain-source on-state resistance	$R_{DS(on)}$	-	9.3	11.3	m Ω	$V_{GS}=4.5V, I_D=15A$
Dynamic Characteristic						
Input Capacitance	C_{iss}	-	1293	-	PF	$V_{GS}=0V, V_{DS}=45V, f=1.0MHz$
Output Capacitance	C_{oss}	-	618	-		
Reverse Transfer Capacitance	C_{rss}	-	13	-		
Gate Resistance	R_G		1.5		Ω	$V_{GS}=0V, V_{DS}=0V, f=1MHz$
Switching Characteristics						
Turn-on delay time	$t_{d(on)}$	-	3.3	-	nS	$V_{GS}=10V, V_{DS}=50V, R_L=0.75\Omega, R_G=3\Omega$
Turn-on Rise time	t_r	-	6.8	-		
Turn-off delay time	$t_{d(off)}$	-	19			
Turn-off Fall time	t_f	-	13	-		
Gate Total Charge	Q_G	-	24	-	nC	$V_{GS}=10V, V_{DS}=5V, I_D=20A$
Gate-Source Charge	Q_{gs}	-	3.6	-		
Gate-Drain Charge	Q_{gd}	-	5.3	-		
Drain-Source Diode Characteristics						
Body Diode Forward Voltage	V_{SD}	-	0.7	1.2	V	$V_{GS}=0V, I_{SD}=2A, T_J=25^{\circ}C$
Body Diode Forward Current	I_S	-	-	85	A	-
Body Diode Reverse Recovery Time	T_{rr}	-	44	-	ns	$T_J=25^{\circ}C, I_F=20A, D_{IF}/d_t=100A/\mu s$
Body Diode Reverse Recovery Charge	Q_{rr}	-	54	-	nC	

DATASHEET

N-Channel Enhancement Mode Power MOSFET

Typical Electrical and Thermal Characteristics

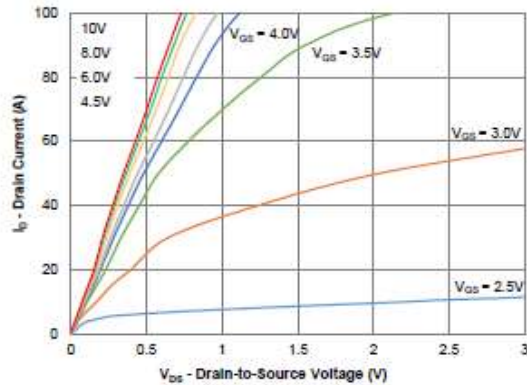


Figure 1: Output Characteristics

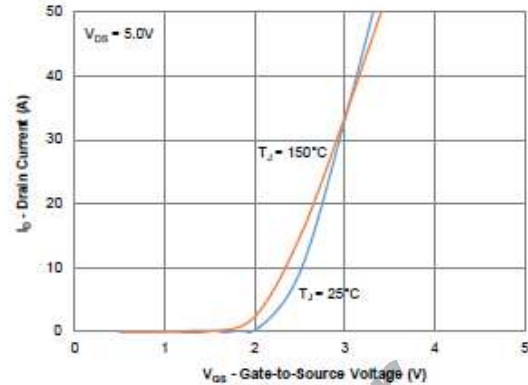


Figure 2: Transfer Characteristics

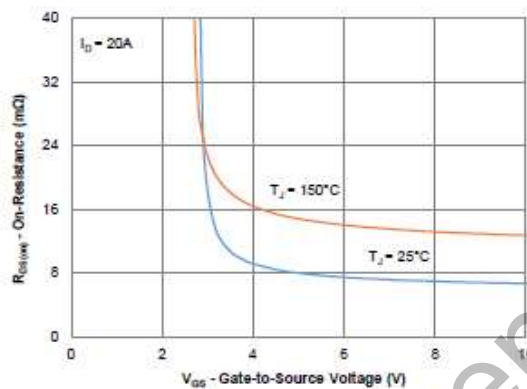


Figure 3: On-Resistance vs. Gate-Source Voltage

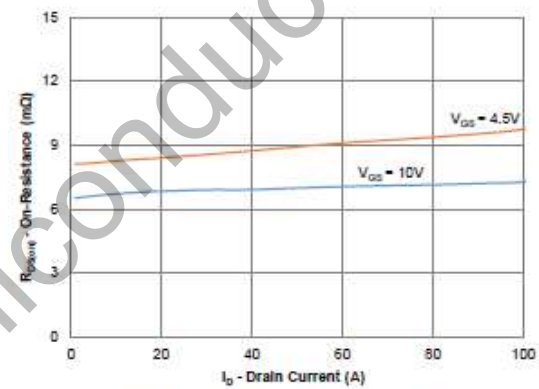


Figure 4: On-Resistance vs. Gate-Source Voltage

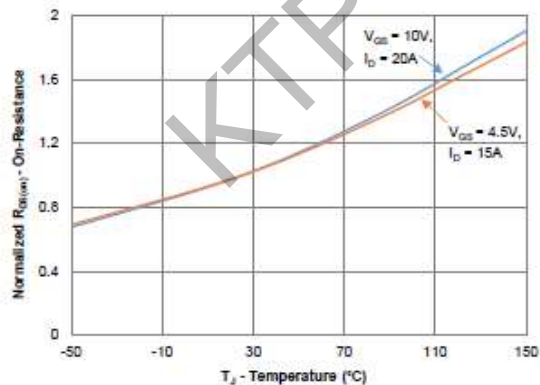


Figure 5: On-Resistance vs. Junction Temperature

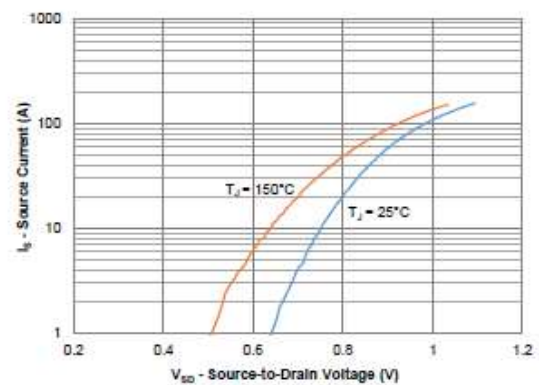


Figure 6: Source-Drain Diode Forward Voltage

DATASHEET

N-Channel Enhancement Mode Power MOSFET

Typical Electrical and Thermal Characteristics

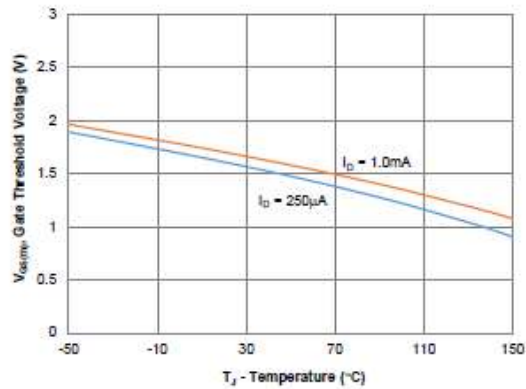


Figure 7: Gate Threshold Variation vs. Junction Temperature

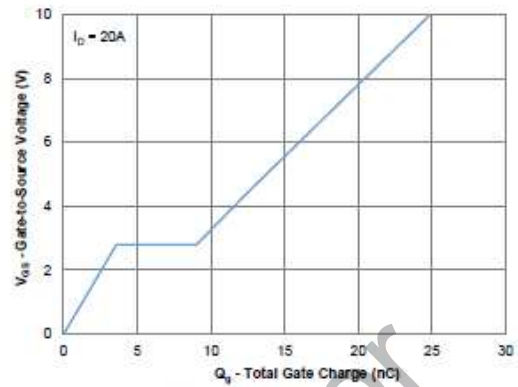


Figure 8: Gate Charge Characteristics

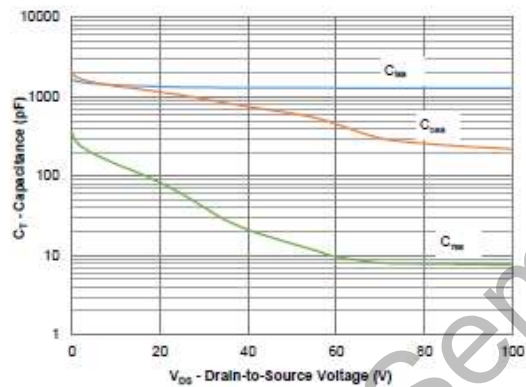


Figure 9: Capacitance Characteristics

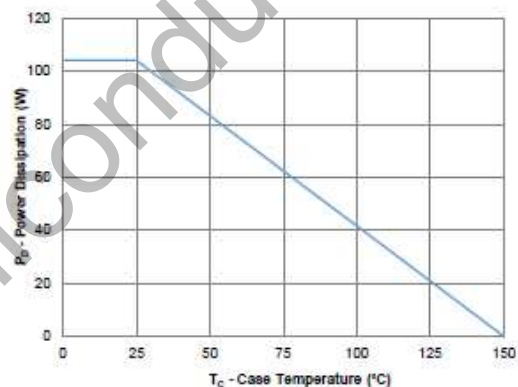


Figure 10: Power Derating

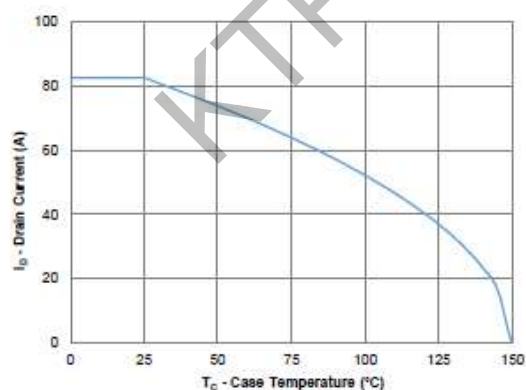


Figure 11: Current Derating

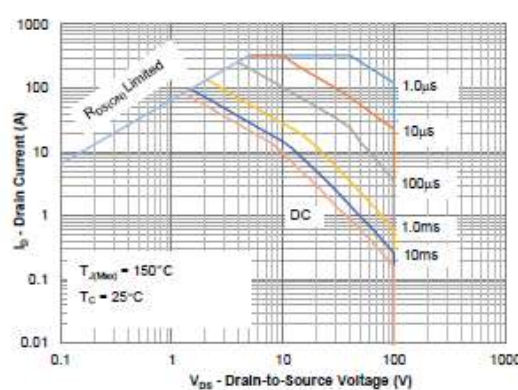


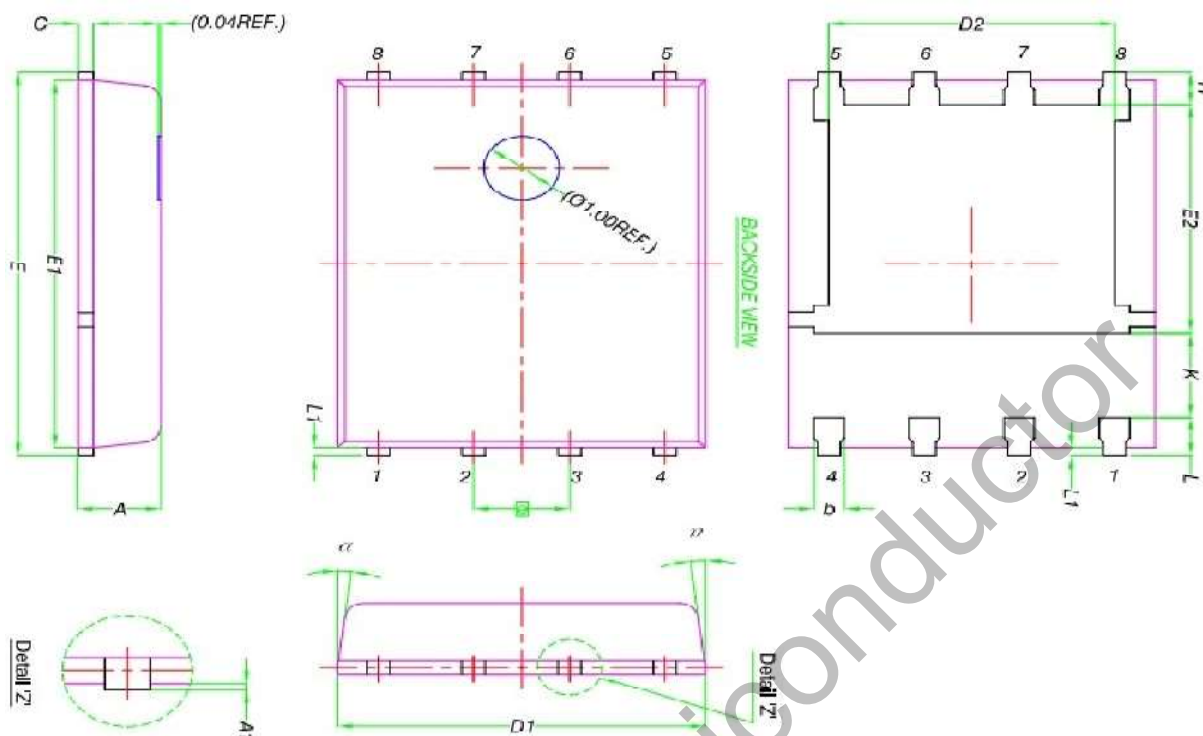
Figure 12: Safe Operating Area

DATASHEET

N-Channel Enhancement Mode Power MOSFET

Package Information

PDFN5*6-8L



DIM.	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0	-	0.05
b	0.33	0.41	0.51
C	0.20	0.25	0.30
D1	4.80	4.90	5.00
D2	3.61	3.81	3.96
E	5.90	6.00	6.10
E1	5.70	5.75	5.80
E2	3.38	3.58	3.78
e	1.27 BSC		
H	0.41	0.51	0.61
K	1.10	-	-
L	0.51	0.61	0.71
L1	0.06	0.13	0.20
α	0°	-	12°

Note:

