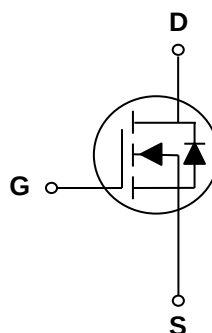


General Description

These N-Channel enhancement mode power field effect transistors are using SGT technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

Features

V_{DS}	30V
I_D (at $V_{GS}=10V$)	170A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	1.3m Ω (Typ)

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Absolute Maximum Ratings $T_A=25^{\circ}C$ unless otherwise noted

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current-Continuous	$TC=25^{\circ}C$	I_D	170	A
	$TC=100^{\circ}C$	I_D	107	A
Maximum Power Dissipation		P_D	95	W
Single pulse avalanche energy		E_{AS}	245	mJ
Junction and Storage Temperature Range		T_J, T_{STG}	-55 To 150	$^{\circ}C$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance junction-case	$R_{\theta JC}$		1.3	$^{\circ}C/W$
Thermal Resistance junction-to-Ambient	$R_{\theta JA}$		62	$^{\circ}C/W$

Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
STATIC PARAMETERS						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =250μA	30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V,V _{GS} =0V			1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V,V _{DS} =0V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =250μA	1.0	1.6	2.5	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =50A		1.3	1.6	mΩ
		V _{GS} =4.5V, I _D =50A		1.9	2.5	mΩ
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{DS} =15V,V _{GS} =0V, F=1.0MHz		3050		pF
C _{Oss}	Output Capacitance			1300		pF
C _{rss}	Reverse Transfer Capacitance			28		pF
SWITCHING PARAMETERS						
t _{d(on)}	Turn-on Delay Time	V _{GS} =10V V _{DS} =15V I _D =1.0A R _{GEN} =3.3Ω		11		nS
t _r	Turn-on Rise Time			39		nS
t _{d(off)}	Turn-Off Delay Time			33		nS
t _f	Turn-Off Fall Time			9		nS
Q _g	Total Gate Charge	V _{DS} =15V,I _D =20A, V _{GS} =10V		41		nC
Q _{gs}	Gate-Source Charge			8		nC
Q _{gd}	Gate-Drain Charge			6.5		nC
V _{SD}	Diode Forward Voltage	V _{GS} =0V,I _{SD} =1A		0.7	1.3	V
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		1.5		Ω

Note:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
3. Essentially independent of operating temperature.
4. V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=68A, R_G=25Ω, Starting T_J=25°C.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

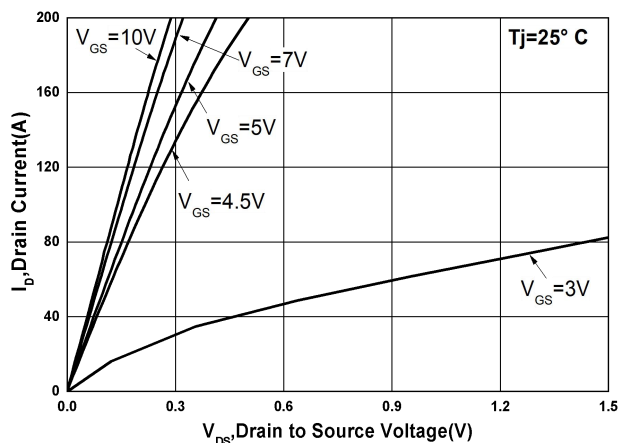


Figure 1: Typical Output Characteristic

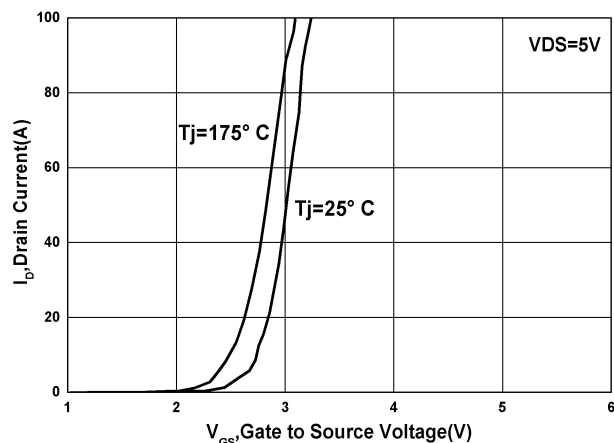


Figure 2: Typical Transfer Characteristics

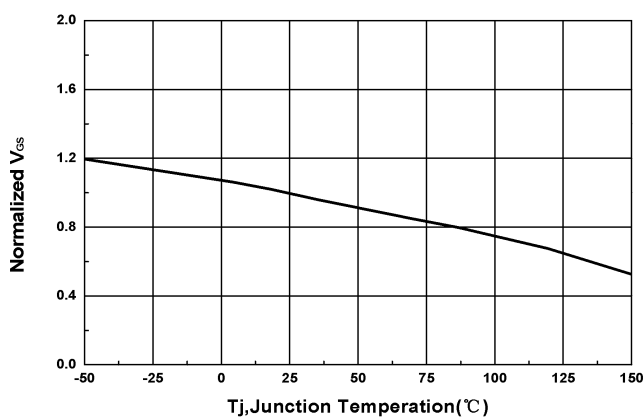


Figure 3: Normalized V_{GS} vs T_j

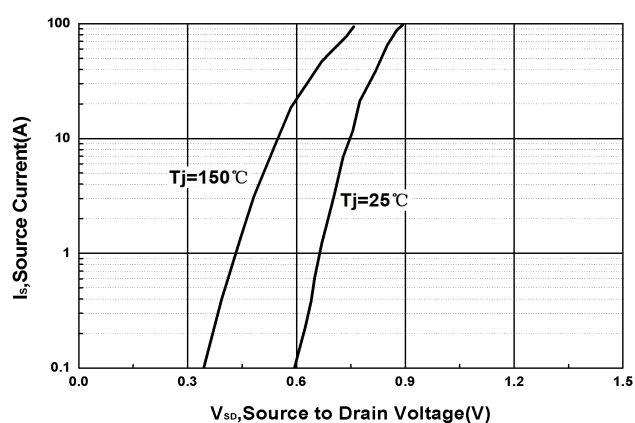


Figure 4: I_S vs V_{SD}

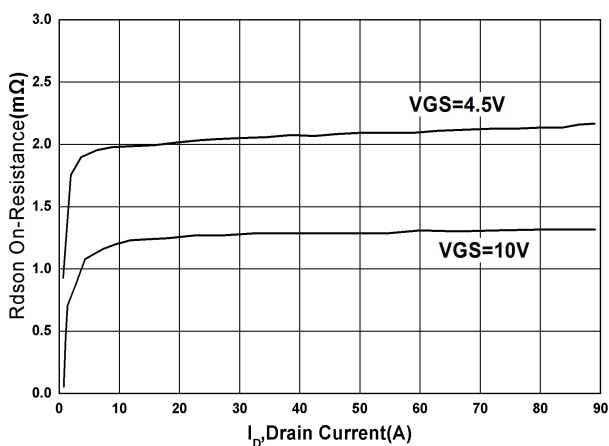


Figure 5: R_{dson} vs I_D

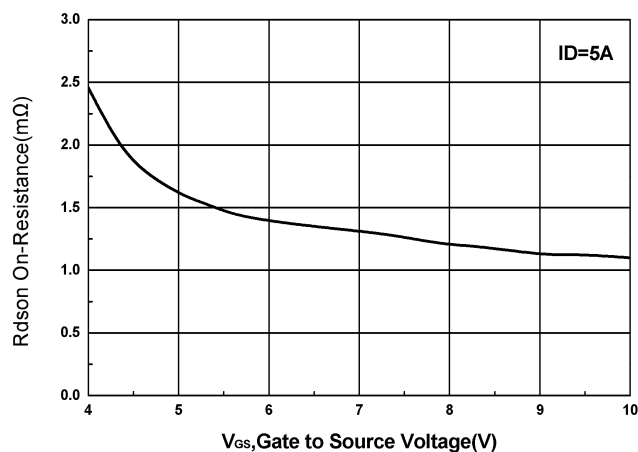


Figure 6: R_{dson} vs V_{GS}

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

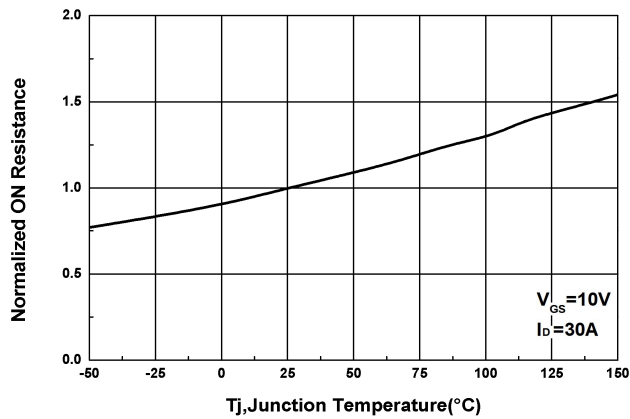


Figure 7: Normalized Rdson vs Tj

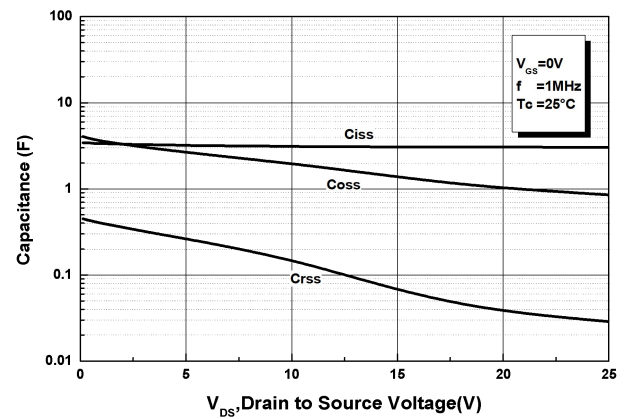


Figure 8: Capacitance vs. VDS

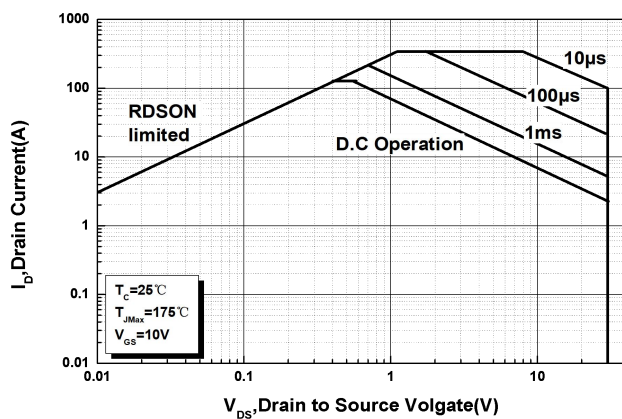


Figure 9: Maximum Forward Biased Safe Operating Area

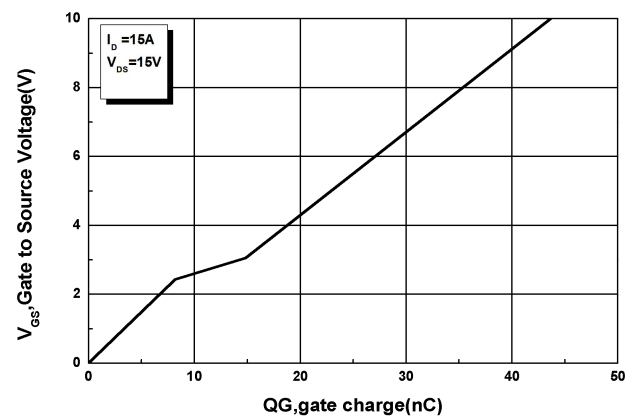


Figure 10: Gate Charge Characteristics

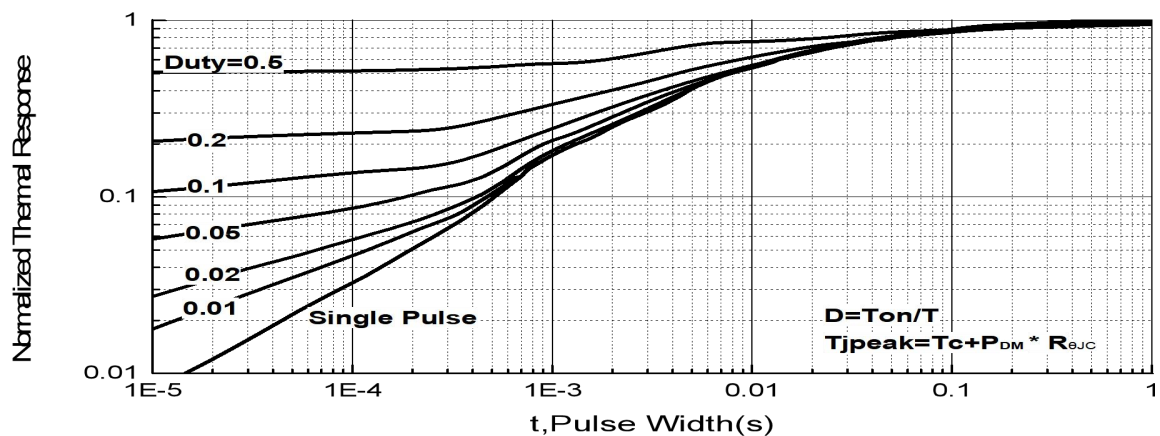
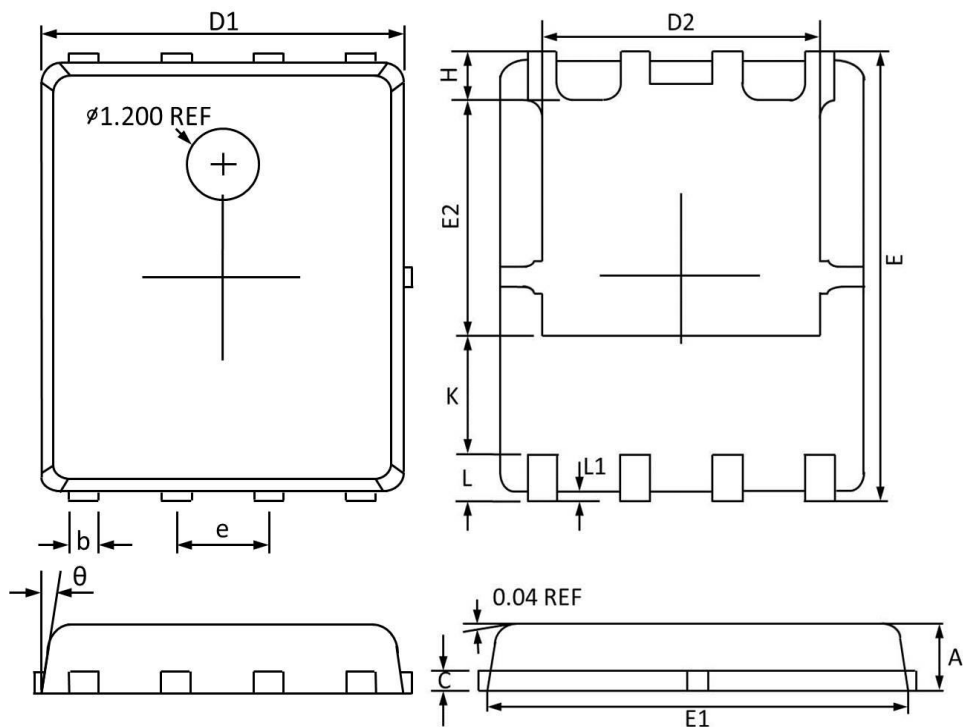


Figure 11: Normalized Thermal Response

PDFN5x6 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.100	0.800	0.043	0.031
b	0.510	0.330	0.020	0.013
C	0.300	0.200	0.012	0.008
D1	5.100	4.800	0.201	0.189
D2	4.100	3.610	0.161	0.142
E	6.200	5.900	0.244	0.232
E1	5.900	5.700	0.232	0.224
E2	3.780	3.350	0.149	0.132
e	1.27BSC		0.05BSC	
H	0.700	0.410	0.028	0.016
K	1.500	1.100	0.059	0.043
L	0.710	0.510	0.028	0.020
L1	0.200	0.060	0.008	0.002
θ	12°	0°	12°	0°