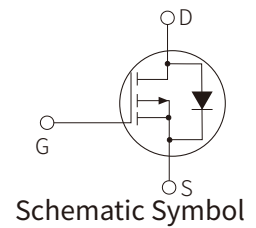
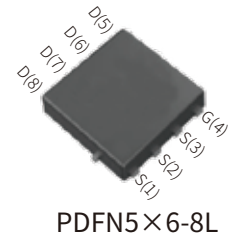


FEATURES

- | $R_{DS(ON)}$ Typ = 8.7m Ω @ $V_{GS} = -10V$
- | $R_{DS(ON)}$ Typ = 12.5m Ω @ $V_{GS} = -4.5V$
- | Advanced Trench Technology
- | Excellent $R_{DS(ON)}$ and Low Gate Charge
- | 100% UIS TESTED!
- | 100% ΔV_{DS} TESTED!



APPLICATION

- | Load Switch
- | PWM Application
- | Power Management

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DS}	-40	V
Pulsed Drain Current ⁽¹⁾	I_{DM}	-160	A
Continuous Drain Current	I_D	$T_c = 25^{\circ}C$ -40	A
		$T_c = 100^{\circ}C$ -24	A
Power Dissipation $T_c = 25^{\circ}C$	P_D	31	W
Gate-to-Source Voltage	V_{GS}	± 20	V
Single Pulsed Avalanche Energy ⁽²⁾	E_{AS}	90	mJ
Junction & Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^{\circ}C$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	4	$^{\circ}C/W$

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-40			V
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
Drain Leakage Current	I _{DSS}	V _{DS} =-40V, V _{GS} =0V			-1.0	μA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1	-1.6	-2.2	V
Static Drain-Source ON-Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-15A		8.7	11.3	mΩ
		V _{GS} =-4.5V, I _D =-10A		12.5	16.3	mΩ
Dynamic Characteristics						
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-20V, f = 1MHz		1997		pF
Output capacitance	C _{oss}			258		pF
Reverse transfer capacitance	C _{rss}			205		pF
Total Gate Charge	Q _g	V _{DS} =-20V, V _{GS} =0 to -10V I _D =-10A		35		nC
Gate-Source Charge	Q _{gs}			6.2		nC
Gate Drain("Miller") Charge	Q _{gd}			7.3		nC
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =-20V, V _{GS} =-10V R _{GEN} = 2.5Ω, I _D =-10A		10		nS
Turn-on Rise Time	t _r			20		nS
Turn-Off Delay Time	t _{d(off)}			51		nS
Turn-Off Fall Time	t _f			28		nS
Drain-Source Diode Characteristics and Max Ratings						
Drain to Source Diode Forward Voltage	V _{SD}	I _S =-10A, V _{GS} =0V			-1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I _F =-10A di/dt = 100A/us		35		nS
Body Diode Reverse Recovery Charge	Q _{rr}			40		nC
Maximum Continuous Drain to Source Diode Forward Current	I _S				-40	A
Maximum Pulsed Drain to Source Diode Forward Current	I _{SM}				-160	A

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. E_{AS} condition: Starting T_J=25°C, V_{DD}=-20V, V_G=-10V, R_G=25ohm, L=0.5mH, I_{AS}=-19A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

PARAMETER CHARACTERISTIC CURVE

Fig 1: Output Characteristics

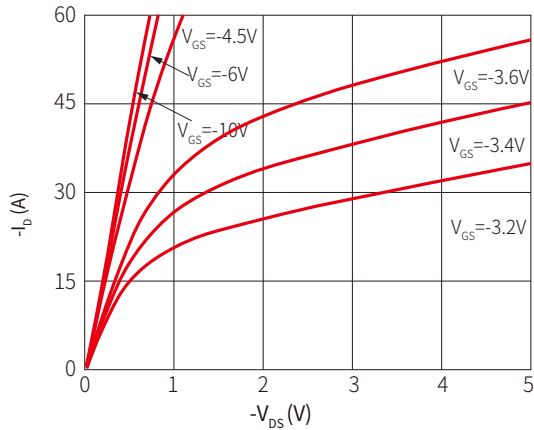


Figure 2: Typical Transfer Characteristics

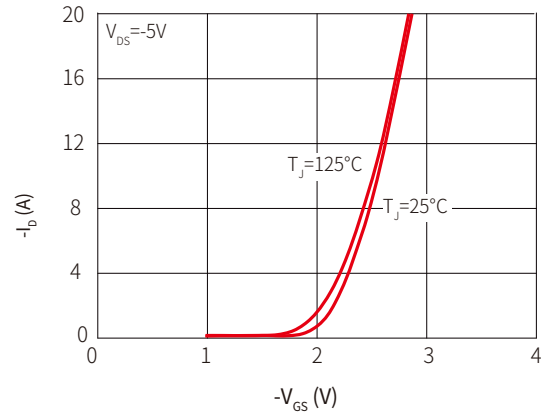


Figure 3: On-Resistance vs. Drain Current

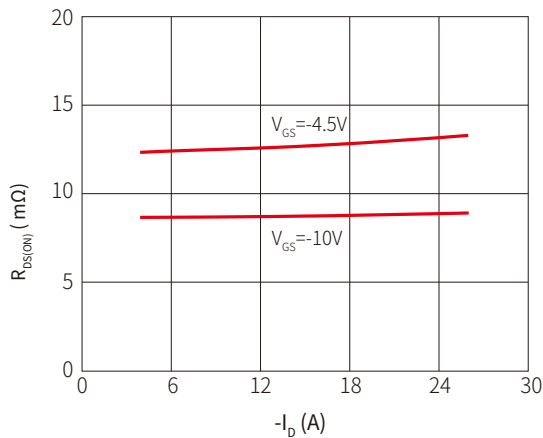


Figure 4: Body Diode Characteristics

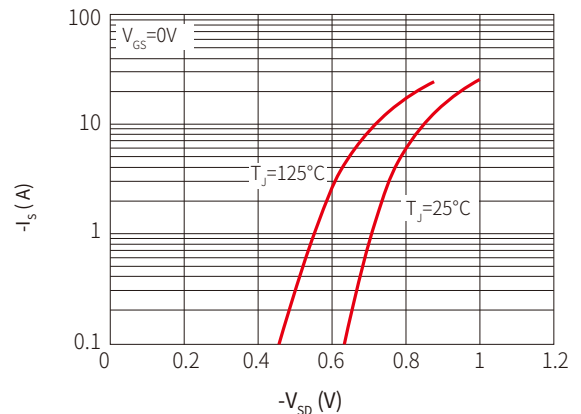


Figure 5: Gate Charge Characteristics

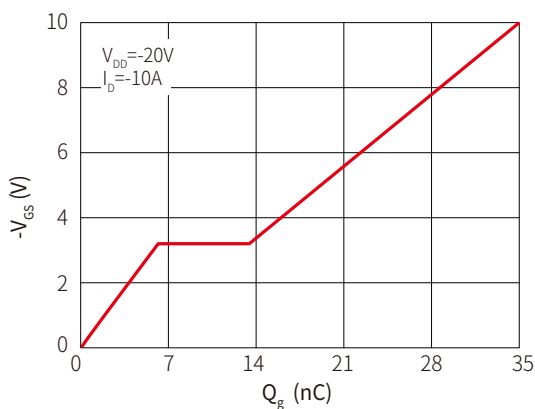
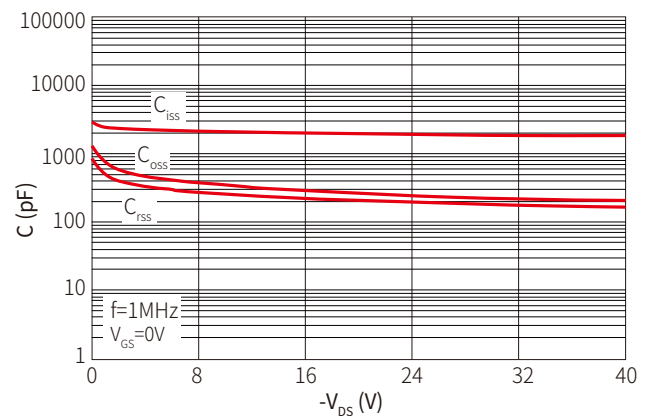
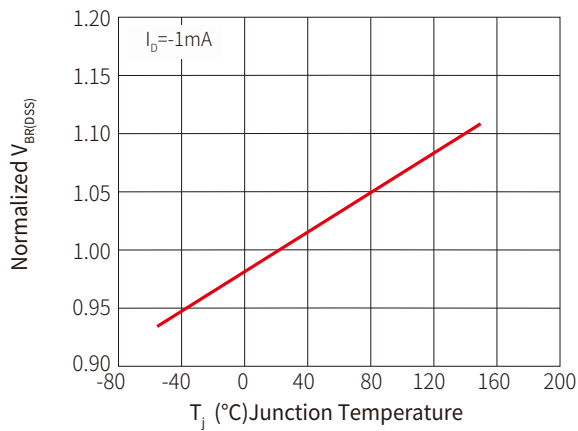
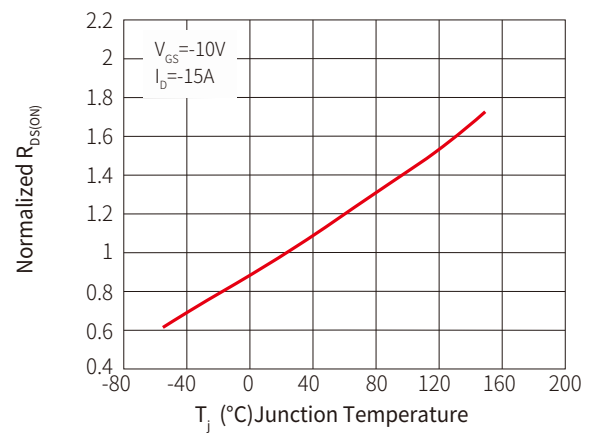
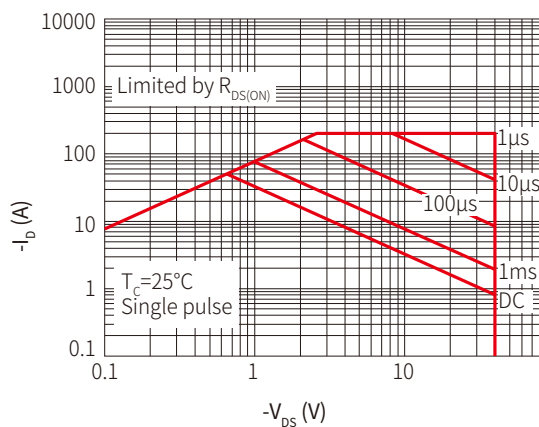
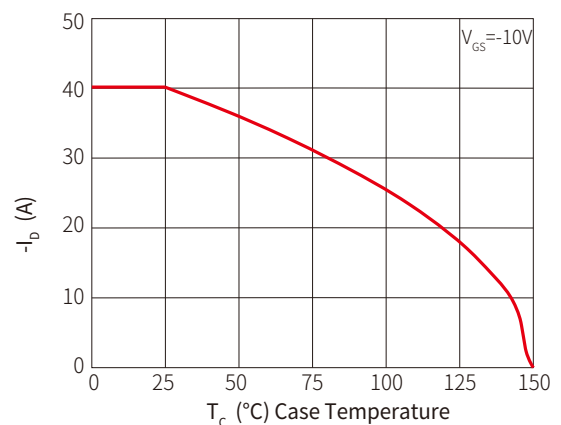
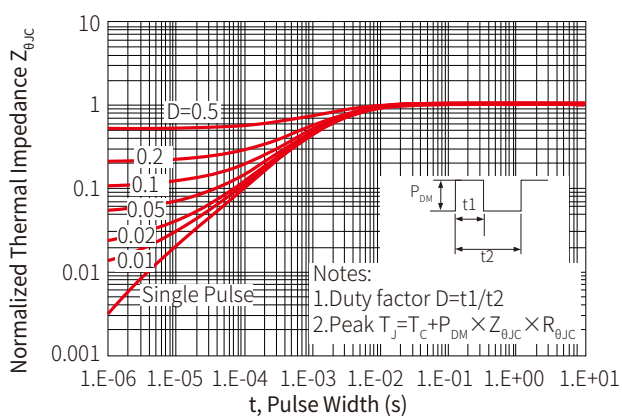
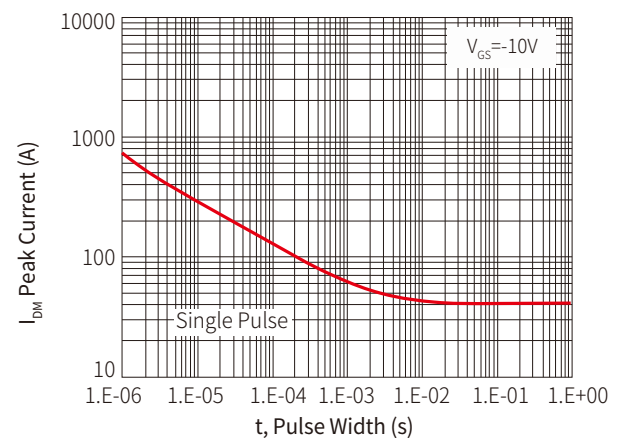


Figure 6: Capacitance Characteristics



**Figure 7: Normalized Breakdown Voltage vs. Junction Temperature****Figure 8: Normalized on Resistance vs. Junction Temperature****Figure 9: Maximum Safe Operating Area****Figure 10: Maximum Continuous Drain Current vs. Case Temperature****Figure 11: Normalized Maximum Transient Thermal Impedance****Figure 12: Peak Current Capacity**

Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.17	0.035	0.046
A1	0.00	0.05	0.000	0.002
A3	0.254REF		0.010REF	
b	0.31	0.51	0.012	0.020
b1	0.03	0.13	0.001	0.005
b2	0.21	0.41	0.008	0.016
D	5.15BSC		0.203BSC	
D1	5.00BSC		0.197BSC	
D2	3.70	3.90	0.146	0.154
E	6.15BSC		0.242BSC	
E1	6.00BSC		0.236BSC	
E2	3.56	3.76	0.140	0.148
e	1.27BSC		0.050BSC	
L	0.51	0.71	0.020	0.028
M	0.51	0.71	0.020	0.028
P	10°	12°	0.394°	0.472°
aaa	0.10		0.004	
bbb	0.10		0.004	
ccc	0.10		0.004	
ddd	0.05		0.002	
eee	0.08		0.003	

Part Number	Component Package	Marking	QTY/Reel	Reel Size
SPM40P04G	PDFN5×6-8L	 40P04 XXXX	5000PCS	13"

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