

FEATURES

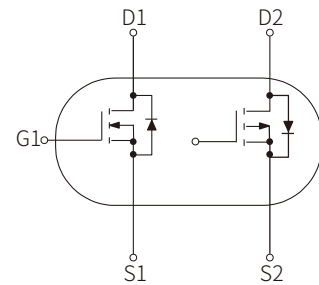
- Improved dv/dt Capability, High Ruggedness
- Maximum Junction Temperature Range (150°C)



SOP-8

APPLICATION

- PWM applications
- Load switch
- Power management



Schematic Symbol

APPROVALS

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

ABSOLUTE MAXIMUM RATINGS($T_a=25^{\circ}\text{C}$)

Parameter	Symbol	Value		Unit
		N-channel	P-channel	
Drain-Source Breakdown Voltage	V_{DS}	40	-40	V
Continuous Drain current $T_A=25^{\circ}\text{C}$ (Note2)	I_D	11	-11	A
Pulse Drain Current Tested $T_A=25^{\circ}\text{C}$ (Note1)	I_{DM}	50	-45	A
Gate-Source Voltage	V_{GS}	± 20	± 20	V
Diode Continuous Forward Current	I_S	11	-11	V
Maximum Power Dissipation $T_A=25^{\circ}\text{C}$	P_D	2		W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 ~ +150		$^{\circ}\text{C}$
Thermal Resistance- Junction to Ambient (Note2)	$R_{\theta JA}$	62.5		$^{\circ}\text{C/W}$

ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$)

N-Channel

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF Characteristics						
Drain-source Breakdown Voltage	BV _{DSS}	V _{GS} =0V,I _D =250μA	40			V
Drain Leakage Curren	I _{DSS}	V _{DS} =40V,V _{GS} =0V			1	μA
Gate Leakage Current	I _{GSS}	V _{GS} =±20V,V _{DS} =0V			±100	nA
ON Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _{DS} =250μA	1		2	V
Drain-source on-state resistance (Note3)	R _{DS(on)}	V _{GS} =10V,I _D =10A		8	12	mΩ
		V _{GS} =4.5V,I _D =5A		11	16	
Dynamic Characteristics (Note4)						
Input Capacitance	C _{iss}	V _{DS} =20V,V _{GS} =0V,f=1.0MHz		1900		pF
Output Capacitance	C _{oss}			140		
Reverse Transfer Capacitance	C _{rss}			115		
Switching Characteristics(Note4)						
Turn-On Delay Time	t _{d(on)}	V _{DD} =20V,I _D =10A V _{GS} =10V,R _G =3Ω		6.8		ns
Turn-On Rise Time	t _r			18		
Turn-Off Delay Time	t _{d(off)}			31		
Turn-Off Fall Time	t _f			18		
Total Gate Charge	Q _g	V _{GS} =10V,V _{DS} =10V,I _D =10A		41		nC
Gate Source Charge	Q _{gs}			6		
Gate Drain Charge	Q _{gd}			7.8		
Diode Forward Voltage	V _{SD}	V _{GS} =0V,I _S =10A			1.2	V

P-Channel

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF Characteristics						
Drain-source Breakdown Voltage	BV _{DSS}	V _{GS} =0V,I _D =-250μA	-40			V
Drain Leakage Curren	I _{DSS}	V _{DS} =-40V,V _{GS} =0V			-1	μA
Gate Leakage Current	I _{GSS}	V _{GS} =±20V,V _{DS} =0V			±100	nA
ON Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _{DS} =-250μA	-1		-2.2	V
Drain-source on-state resistance (Note3)	R _{DS(on)}	V _{GS} =-10V,I _D =-8A		15	20	mΩ
		V _{GS} =-4.5V,I _D =-5A		20	27	
Dynamic Characteristics (Note4)						
Input Capacitance	C _{iss}	V _{DS} =-20V,V _{GS} =0V,f=1.0MHz		1391		pF
Output Capacitance	C _{oss}			162		
Reverse Transfer Capacitance	C _{rss}			141		
Switching Characteristics (Note4)						
Turn-On Delay Time	t _{d(on)}	V _{DD} =-20V,I _D =-8 A V _{GS} =-10V,R _G =3Ω		13		ns
Turn-On Rise Time	t _r			4.5		
Turn-Off Delay Time	t _{d(off)}			80		
Turn-Off Fall Time	t _f			57		
Total Gate Charge	Q _g	V _{GS} =-10V,V _{DS} =-20V,I _D =-8A		27		nC
Gate Source Charge	Q _{gs}			2.3		
Gate Drain Charge	Q _{gd}			6.8		
Drain-source Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V,I _S =-8A			-1.2	V

NoteNoteNoteNote:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec
3. Pulse Test: pulse width ≤ 300 us, duty cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production testing.

PARAMETER CHARACTERISTIC CURVE

N-Channel

Figure 1: Power De-rating

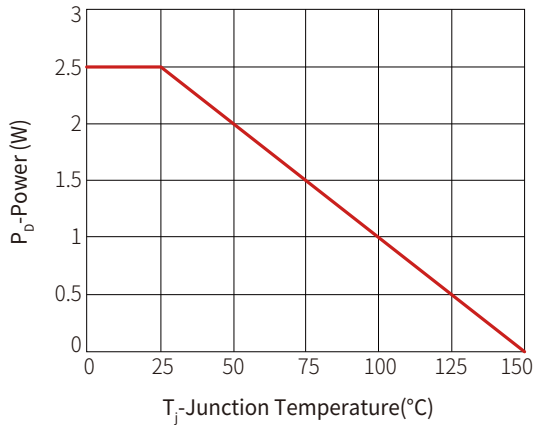


Figure 2: On-Resistance vs. Drain Current

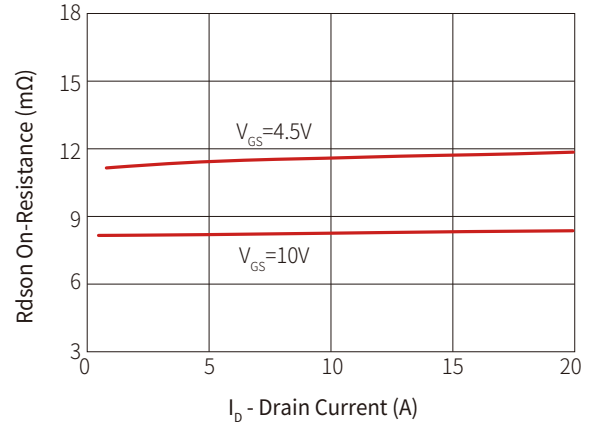


Figure 3: Rdson-Junction Temperature

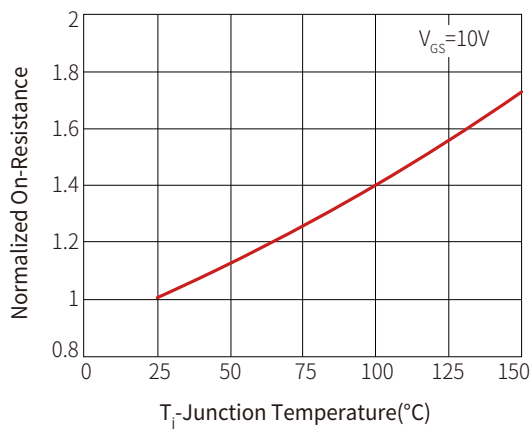


Figure 4: Output Characteristics

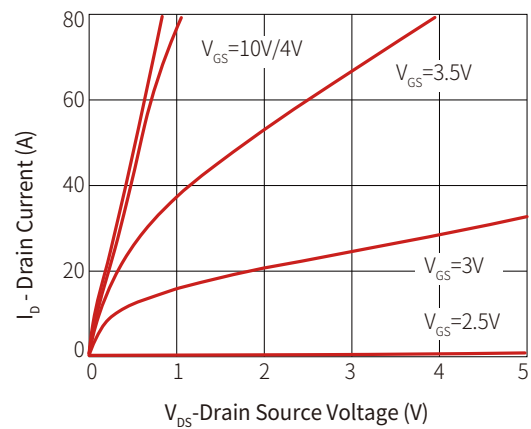


Figure 5: Capacitance vs V_{DS}

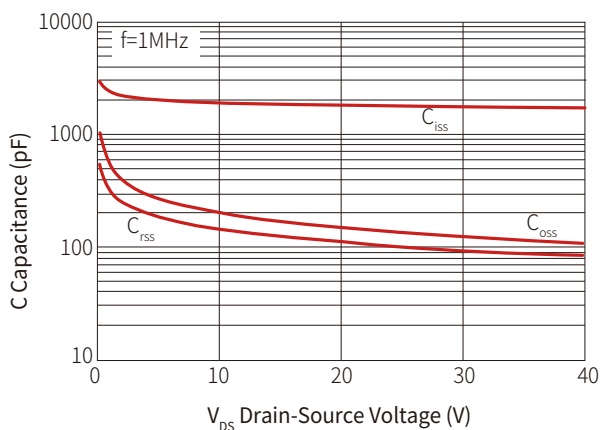


Figure 6: Gate-Charge

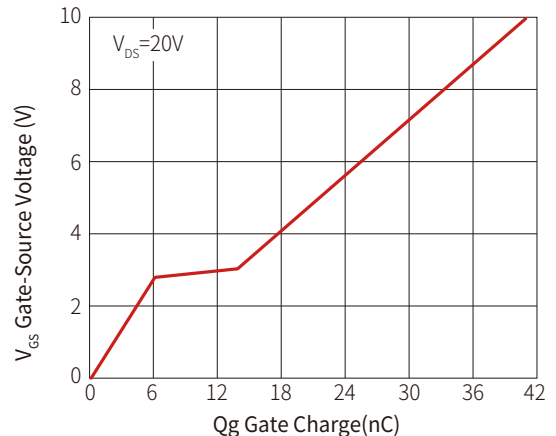
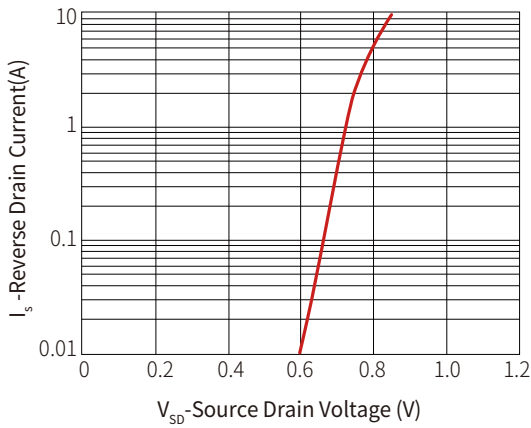
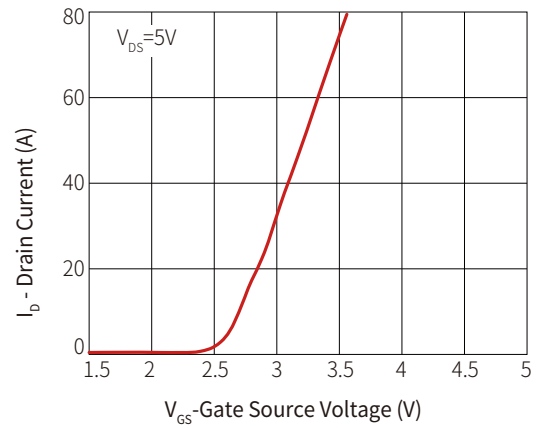
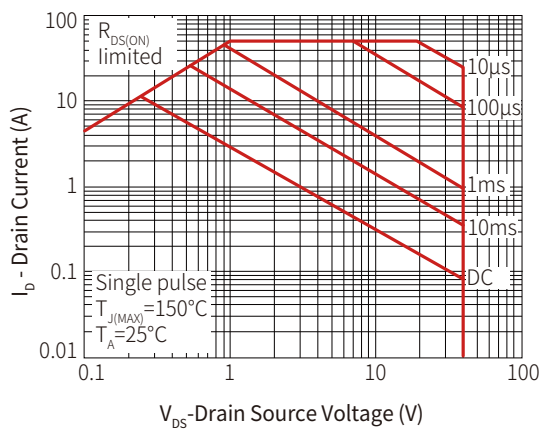
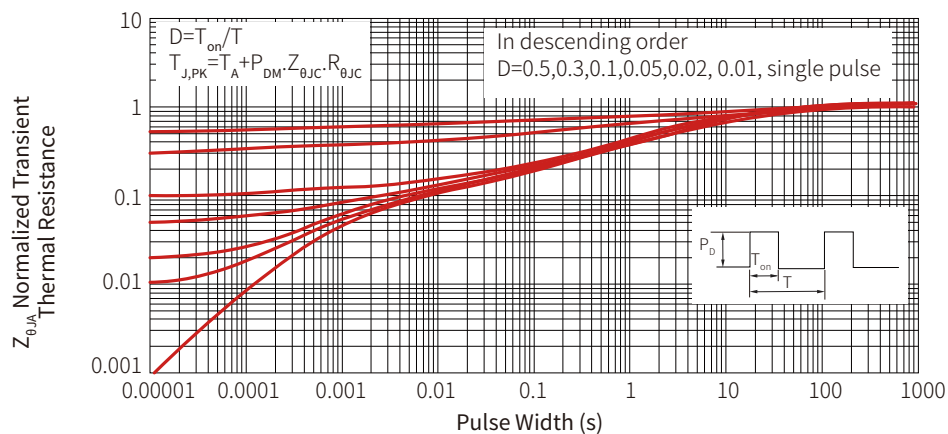


Figure 7: Typical source-Drain Diode Forward Voltage

Figure 8: Transfer Characteristics

Figure 9: Safe Operation Area

Figure 10: Normalized Maximum Transient Thermal impedance


P-Channel

Figure 1: Power De-rating

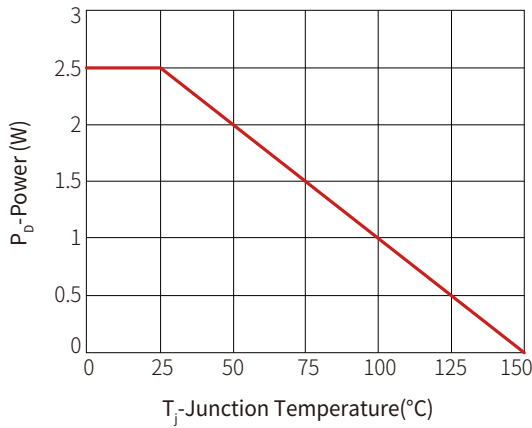


Figure 2: On-Resistance vs. Drain Current

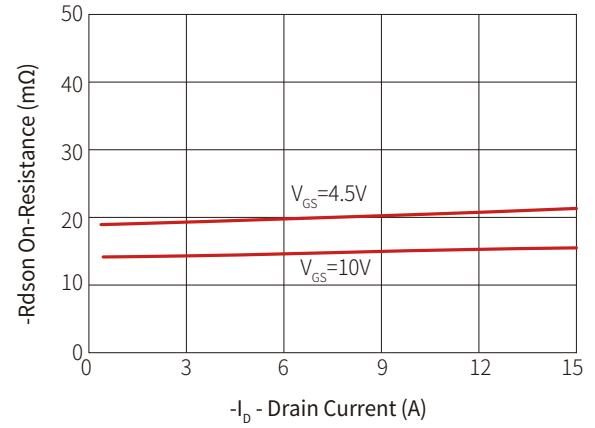


Figure 3: R_DS(on) - Junction Temperature

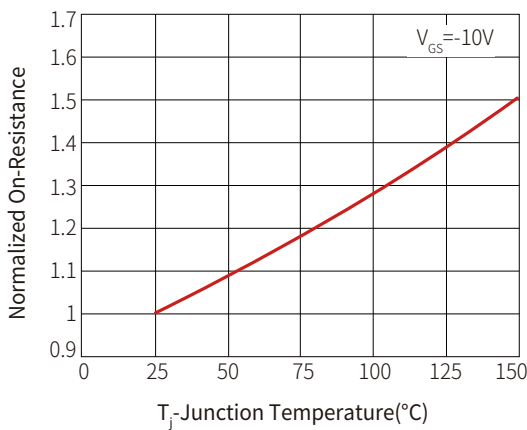


Figure 4: Output Characteristics

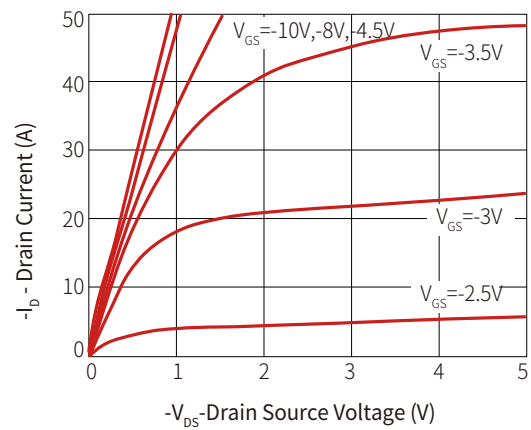


Figure 5: Capacitance vs V_DS

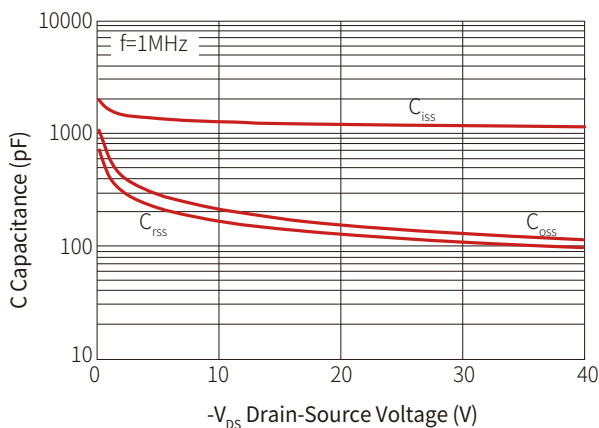


Figure 6: Gate-Charge

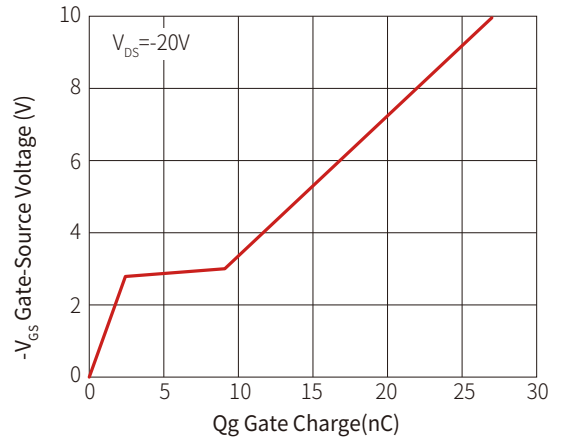
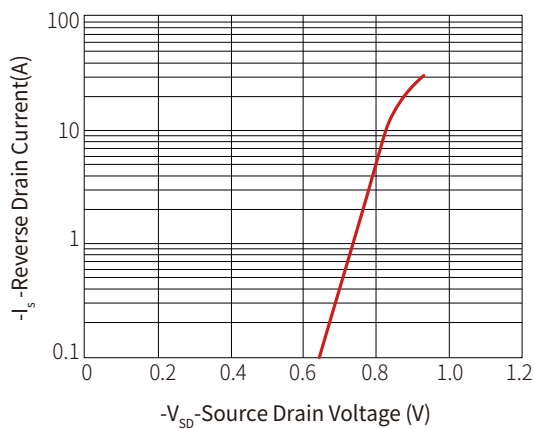
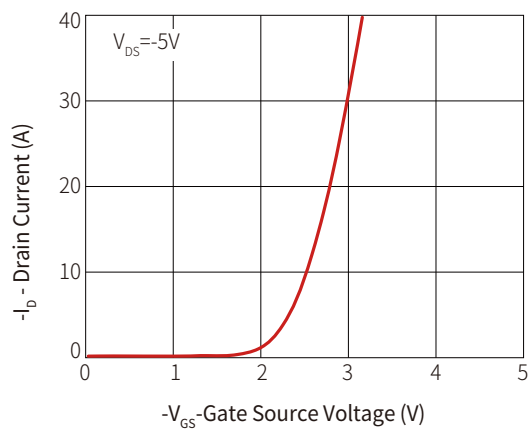
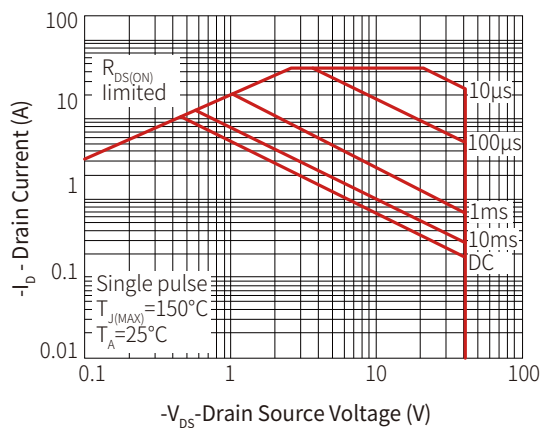
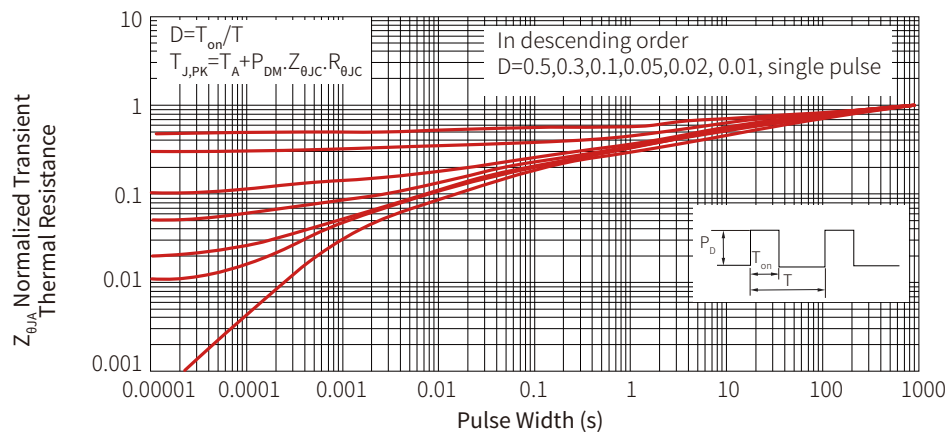
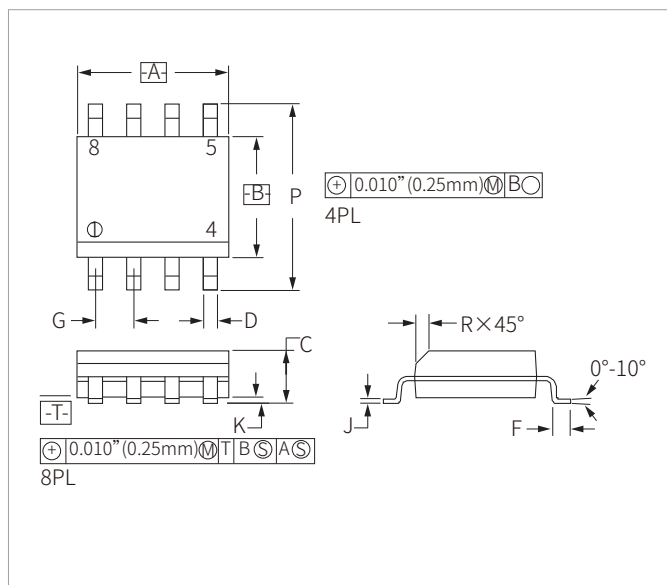


Figure 7: Typical source-Drain Diode Forward Voltage

Figure 8: Transfer Characteristics

Figure 9: Safe Operation Area

Figure 10: Normalized Maximum Transient Thermal impedance




Part Number	Component Package	QTY/Reel	Reel Size
SNPM40C11	SOP-8	3000PCS	13"

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