

FEATURES

N-Channel

$$V_{DS} = 40V, I_D = 8A$$

$$R_{DS(ON)} < 22m\Omega @ V_{GS}=10V, R_{DS(ON)} < 28m\Omega @ V_{GS}=4.5V$$

P-Channel

$$V_{DS} = -40V, I_D = -6A$$

$$R_{DS(ON)} < 42m\Omega @ V_{GS}=-10V, R_{DS(ON)} < 50m\Omega @ V_{GS}=-4.5V$$

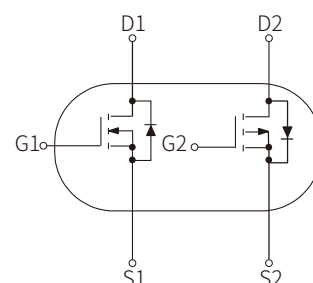
Very Low On- resistance $R_{DS(ON)}$



SOP-8



Marking



Schematic Symbol

APPLICATION

used in various power switching circuit for system

miniaturization and higher efficiency

Power switch circuit of electron ballast and adaptor

Ideal for high-frequency switching and synchronous

rectification

APPROVALS

RoHS Compliance with 2011/65/EU

HF Compliance with IEC61249-2-21:2003

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

Parameter		Symbol	Value		Unit
			N-channel	P-channel	
Drain-Source Voltage		V_{DS}	40	-40	V
Drain Current	$T_c=25^\circ C$	I_D	8	-6	A
	$T_c=100^\circ C$		6.4	-4.8	A
Drain Current - Pulsed		I_{DM}^{al}	32	-24	A
Gate-Source Voltage		V_{GS}	± 20	± 20	V
Power Dissipation ($T_c = 25^\circ C$)		P_{tot}	2		W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to 150		$^\circ C$
Thermal Resistance- Junction to Ambient		$R_{\theta JA}$	62.5		$^\circ C/W$

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	1.0	1.5	2.2	V
Drain-source on-state resistance ^a	R _{DS(on)}	V _{GS} =10V,I _D =10A		11.0	14.5	mΩ
		V _{GS} =4.5V,I _D =5A		15.5	21	
Forward transconductance ^a	g _{fs}	V _{DS} =5V,I _D =8A		12		S
Dynamic Characteristics ^b						
Input Capacitance	C _{iss}	V _{DS} =20V,V _{GS} =0V,f=1.0MHz		715		pF
Output Capacitance	C _{oss}			62		
Reverse Transfer Capacitance	C _{rss}			48		
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{DS} =20V,R _L =2.6Ω V _{GS} =10V,R _{GEN} =3.0Ω		8.4		ns
Turn-On Rise Time	t _r			3.0		
Turn-Off Delay Time	t _{d(off)}			27.7		
Turn-Off Fall Time	t _f			3.8		
Total Gate Charge	Q _g	V _{GS} =10V,V _{DS} =20V,I _D =8A		15.0		nC
Gate Source Charge	Q _{gs}			2.1		
Gate Drain Charge	Q _{gd}			3.5		
Diode Forward Voltage	V _{SD}	V _{GS} =0V,I _S =1A		0.75	1.2	V

P-Channel

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF Characteristics						
Drain-source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-40			V
Drain Leakage Curren	I_{DSS}	$V_{DS}=-40V, V_{GS}=0V$			-1	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
ON Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-1.0	-1.5	-2.2	V
Drain-source on-state resistance ^a	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-5A$		18	25.5	m Ω
		$V_{GS}=-4.5V, I_D=-3.5A$		27	36.5	
Forward transconductance ^a	g_{fs}	$V_{DS}=-5V, I_D=-1A$		11		S
Dynamic Characteristics ^b						
Input Capacitance	C_{iss}	$V_{DS}=-20V, V_{GS}=0V, f=1.0MHz$		1022		pF
Output Capacitance	C_{oss}			105		
Reverse Transfer Capacitance	C_{rss}			80		
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-20V, R_L=3.6\Omega$ $V_{GS}=-10V, R_{GEN}=3\Omega, I_D=-6A$		8		ns
Turn-On Rise Time	t_r			15		
Turn-Off Delay Time	$t_{d(off)}$			22		
Turn-Off Fall Time	t_f			9		
Total Gate Charge	Q_g	$V_{GS}=-10V, V_{DS}=-20V, I_D=-6A$		19.5		nC
Gate Source Charge	Q_{gs}			3.4		
Gate Drain Charge	Q_{gd}			4.1		
Drain-source Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-1A$		-0.78	-1.2	V

Notes:

a. Pulse test: Pulse width < 300 μs , duty cycle < 2 %

b. Guaranteed by design, not subject to production testing

PARAMETER CHARACTERISTIC CURVE

N-Channel

Figure 1: Output Characteristic

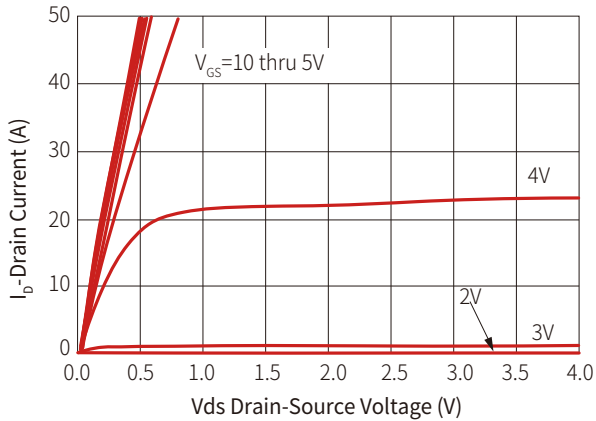


Figure 2: On-Resistance vs. Drain Current

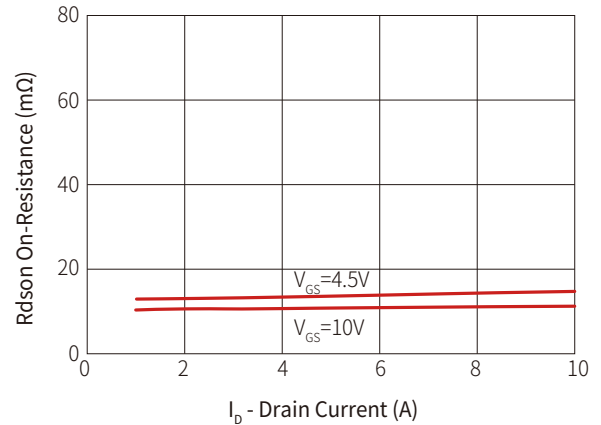


Figure 3: Transfer Characteristic

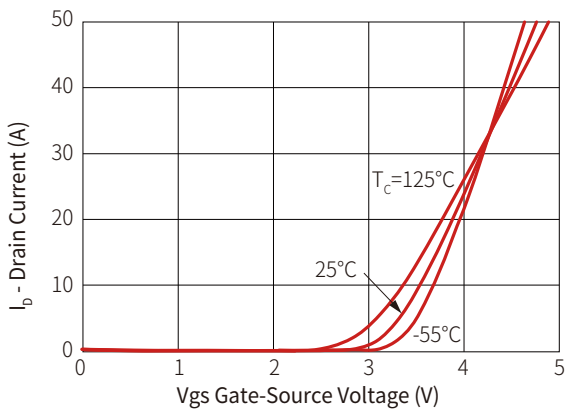


Figure 4: On-Resistance vs. Junction Temperature

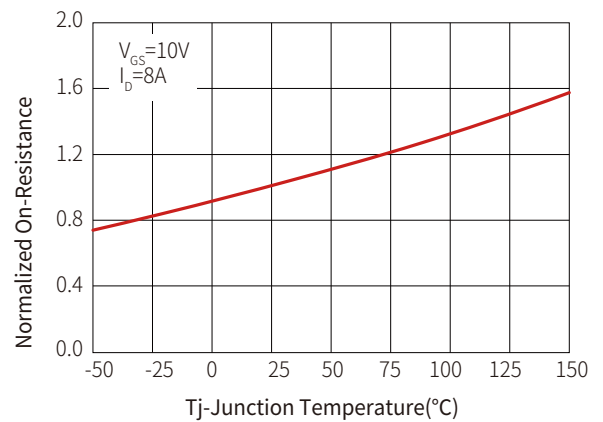


Figure 5: Safe Operation Area

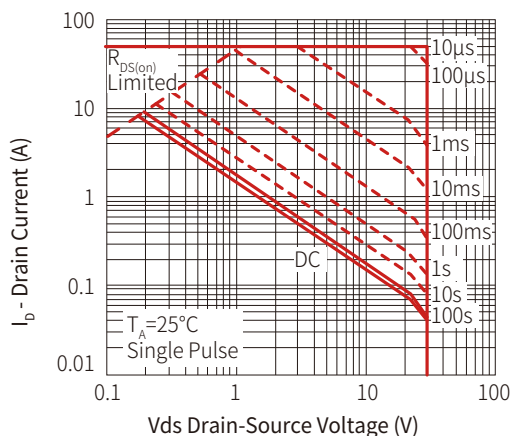


Figure 6: Capacitance Characteristic

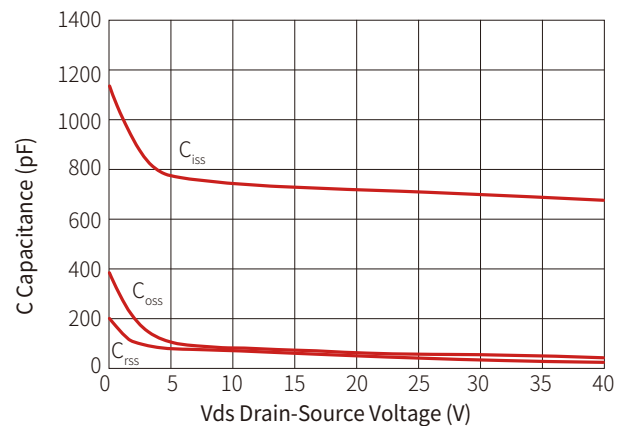
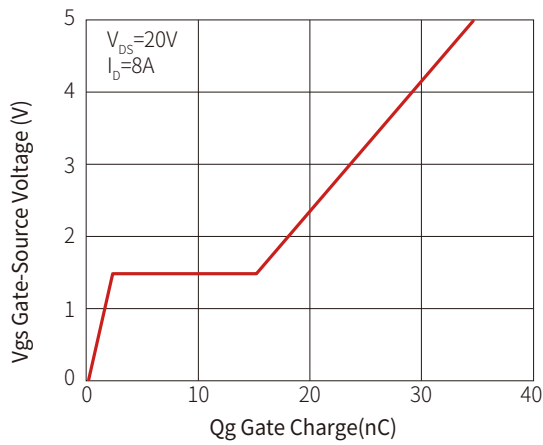
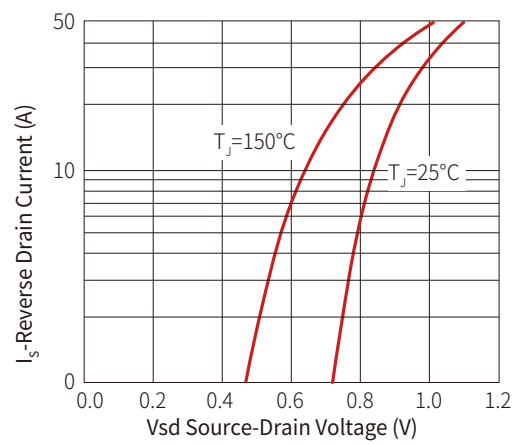


Figure 7: Gate-Charge Characteristic

Figure 8: Body Diode Characteristic


P-Channel

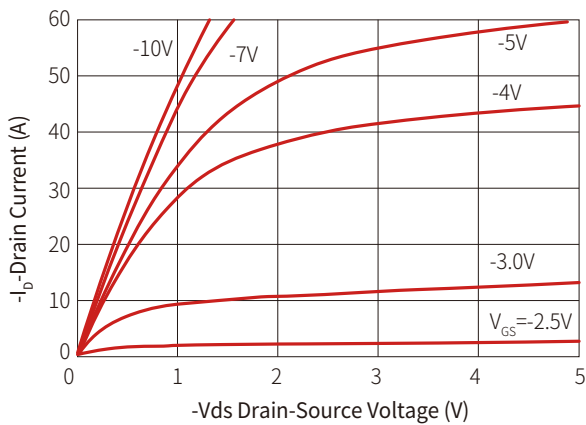
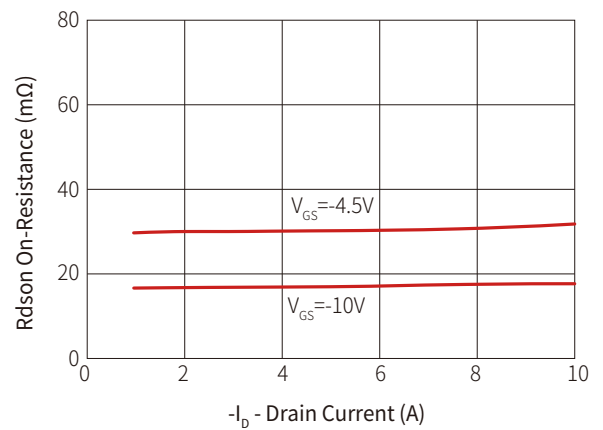
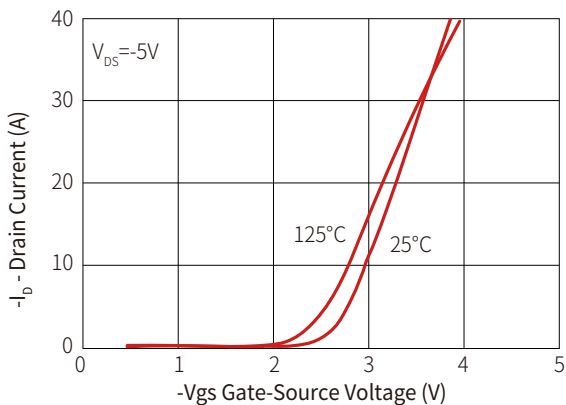
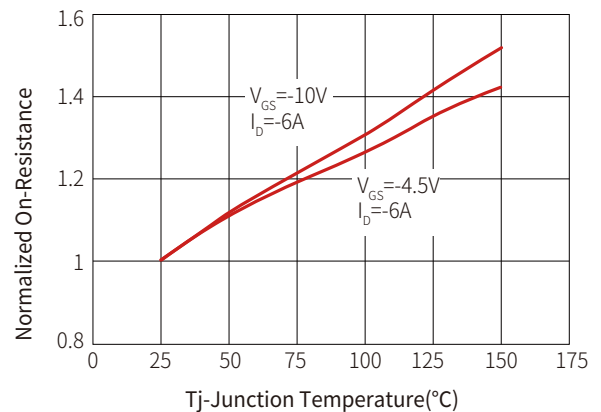
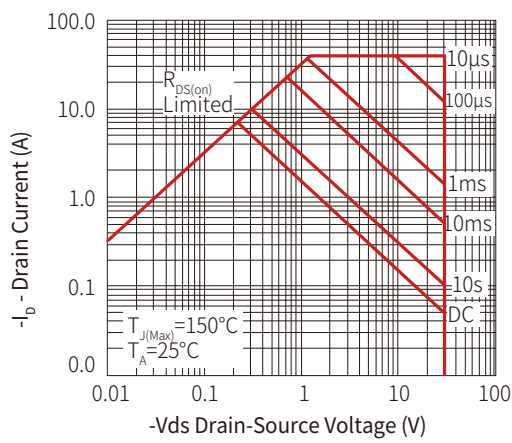
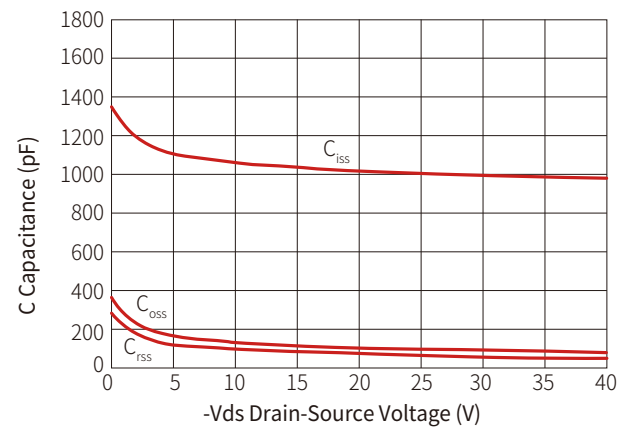
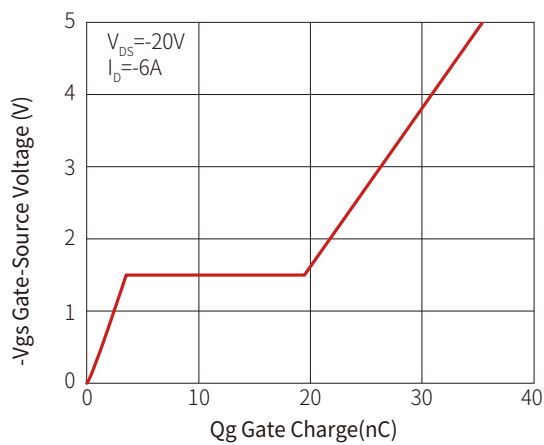
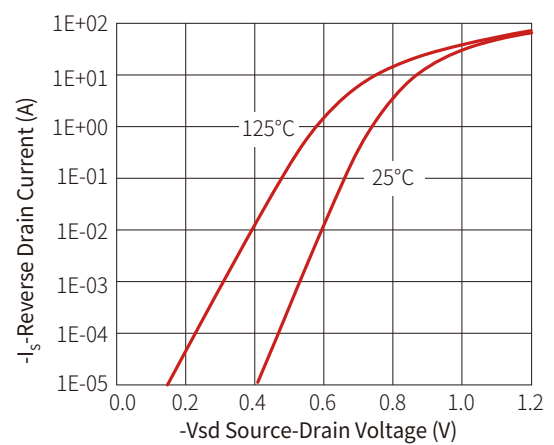
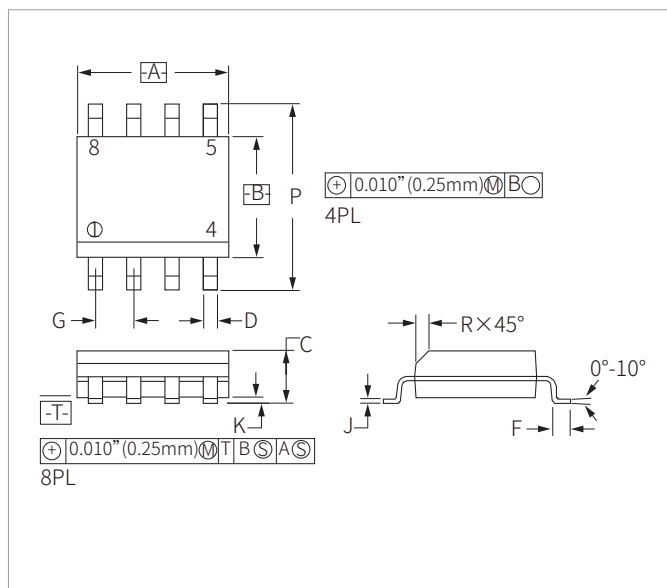
Figure 1: Output Characteristic

Figure 2: On-Resistance vs. Drain Current

Figure 3: Transfer Characteristic

Figure 4: On-Resistance vs. Junction Temperature


Figure 5: Safe Operation Area

Figure 6: Capacitance Characteristic

Figure 7: Gate-Charge Characteristic

Figure 8: Body Diode Characteristic




Part Number	Component Package	QTY/Reel	Reel Size
SNPM4614A	SOP-8	3000PCS	13"

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