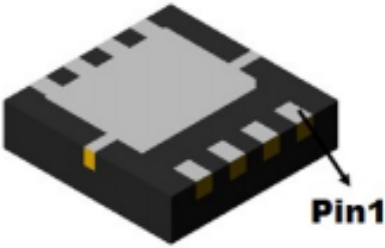
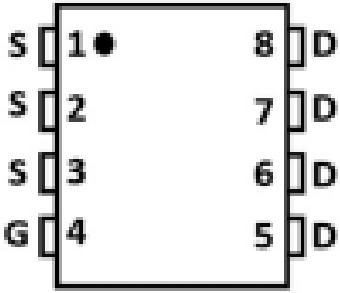
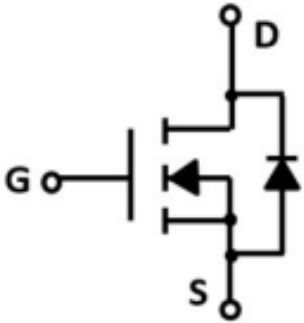


N-Channel Enhancement Mode Field Effect Transistor

<p>Product Summary</p> <ul style="list-style-type: none"> • V_{DS} 30V • I_D 50A • $R_{DS(ON)}$ (at $V_{GS}=10V$) < 8 mohm • $R_{DS(ON)}$ (at $V_{GS}=4.5V$) < 12 mohm • 100% UIS Tested • 100% ∇V_{DS} Tested 	<p>Applications</p> <ul style="list-style-type: none"> • High current load applications • Load switching • Hard switched and high frequency circuits • Uninterruptible power supply
   <p>DFN3.3X3.3</p>	

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

Parameter	Symbol	Limit	Unit
Drain-source Voltage	V_{DS}	30	V
Gate-source Voltage	V_{GS}	± 20	V
Drain Current	I_D	$T_C=25^{\circ}C$	50
		$T_C=100^{\circ}C$	100
Pulsed Drain Current ^A	I_{DM}	195	A
Total Power Dissipation	P_D	$T_C=25^{\circ}C$	21
		$T_C=100^{\circ}C$	10.5
Single Pulse Avalanche Energy ^B	E_{AS}	112	mJ
Thermal Resistance Junction-to-Case ^C	$R_{\theta JC}$	7.1	$^{\circ}C/W$
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+175	$^{\circ}C$

■ **Ordering Information**

Part NO.	SI008N03M
Marking	008N03M
Packing Information	REEL TAPE
Basic ordering unit (pcs)	5000

■ Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	$T_J=25^{\circ}\text{C}$		1	μA
			$T_J=55^{\circ}\text{C}$		5	
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.5	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=15A$		5.8	8	m Ω
		$V_{GS}=4.5V, I_D=15A$		10	12	
Diode Forward Voltage	V_{SD}	$I_S=15A, V_{GS}=0V$		0.85	1.2	V
Maximum Body-Diode Continuous Current	I_S				50	A
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$		1015		μF
Output Capacitance	C_{oss}			201		
Reverse Transfer Capacitance	C_{rss}			164		
Gate Resistance	R_g	$f=1\text{MHz}$		1.5	3	Ω
Switching Parameters						
Total Gate Charge	Q_g	$V_{GS}=10V, V_{DS}=15V, I_D=20A$		23.6		nC
Total Gate Charge	$Q_{g(4.5V)}$			12.9		
Gate-Source Charge	Q_{gs}			3.9		
Gate-Drain Charge	Q_{gd}			7		
Reverse Recovery Charge	Q_{rr}	$I_F=15A, di/dt=100A/\mu s$		0.2		ns
Reverse Recovery Time	t_{rr}			5		
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=10V, V_{DD}=20V, I_D=2A, R_{GEN}=3\Omega$		7		ns
Turn-on Rise Time	t_r			19		
Turn-off Delay Time	$t_{D(off)}$			24		
Turn-off fall Time	t_f			24		

A. Pulse Test: Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

B. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design, while $R_{\theta JA}$ is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.

■ Typical Performance Characteristics

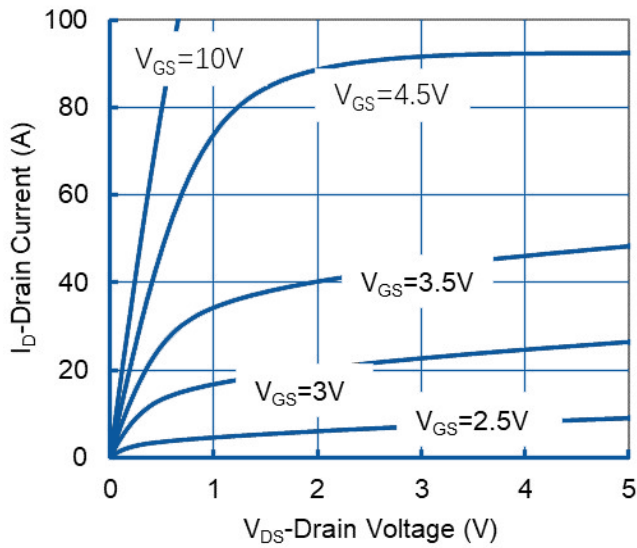


Figure1. Output Characteristics

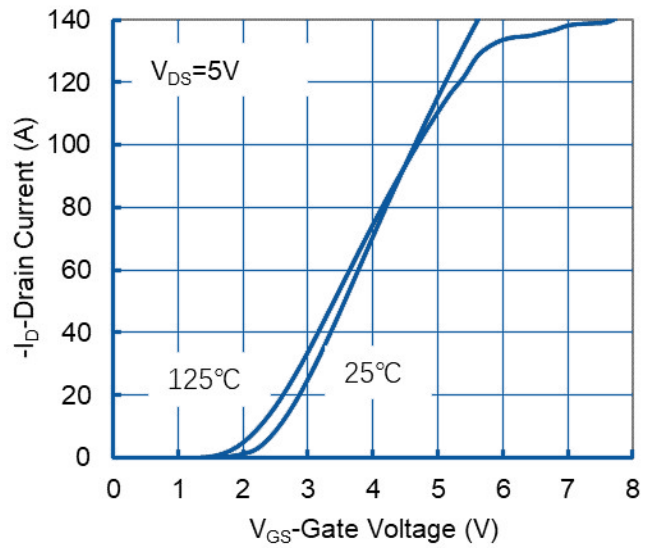


Figure2. Transfer Characteristics

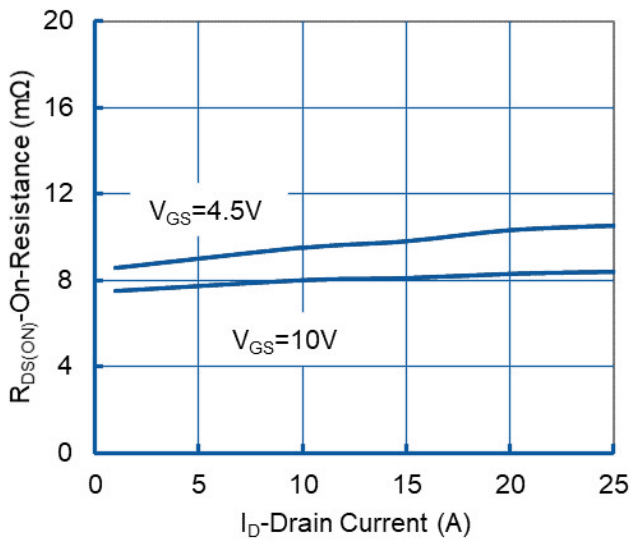


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

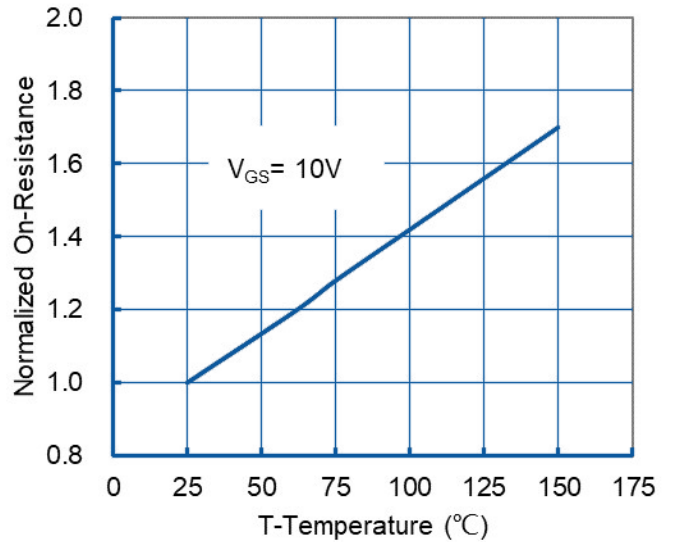


Figure 4: On-Resistance vs. Junction Temperature

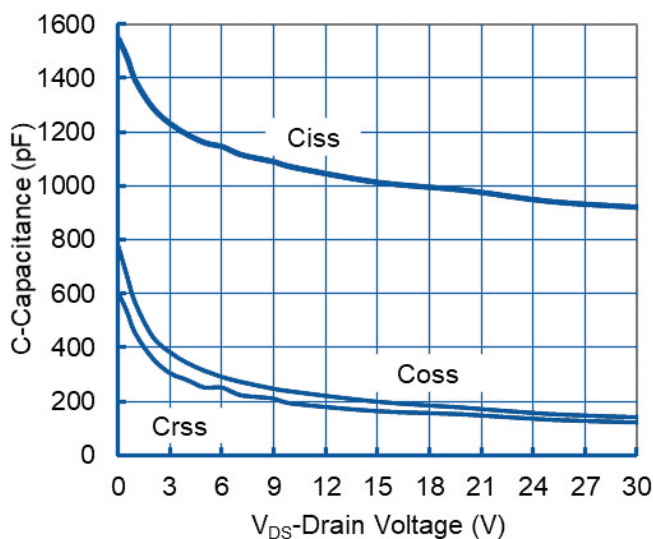


Figure5. Capacitance Characteristics

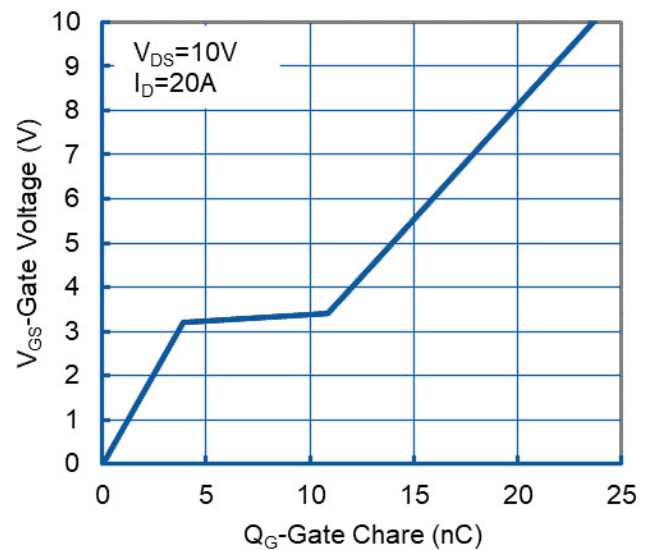


Figure6. Gate Charge

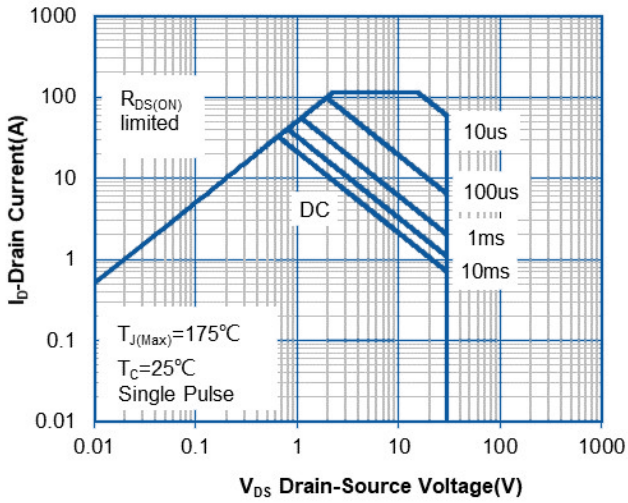


Figure7. Safe Operation Area

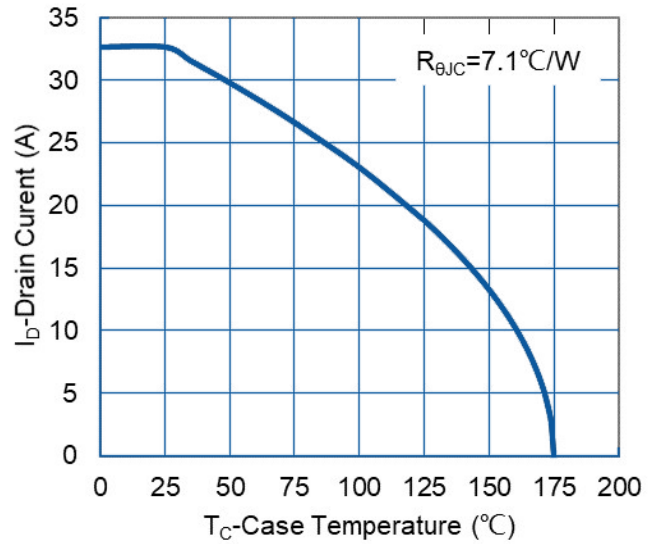


Figure8. Maximum Continuous Drain Current vs Case Temperature

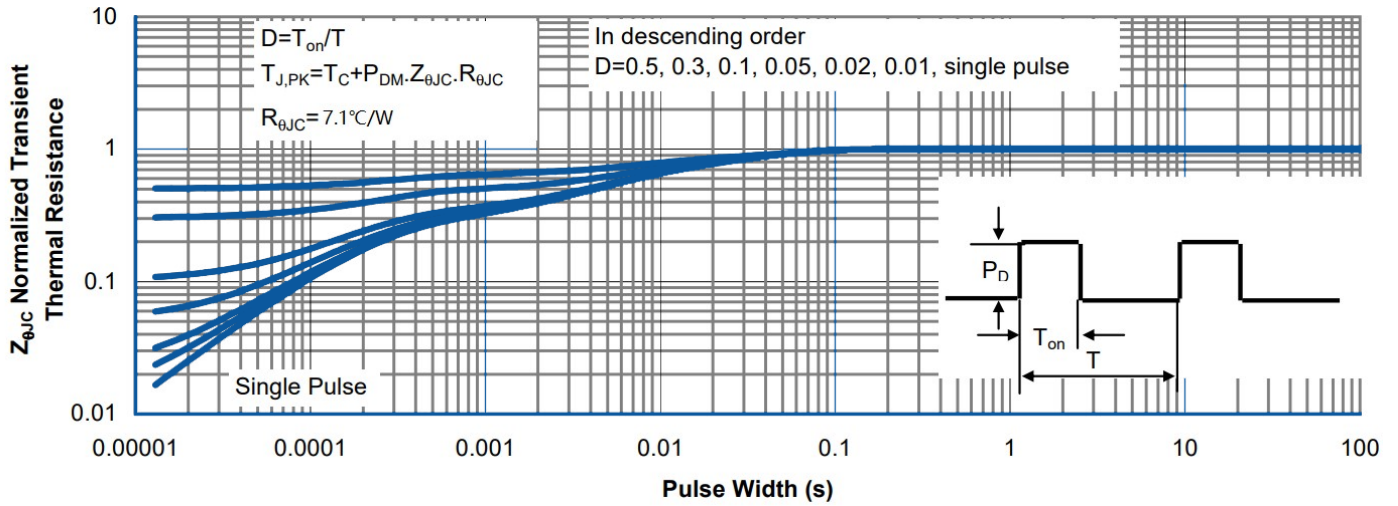
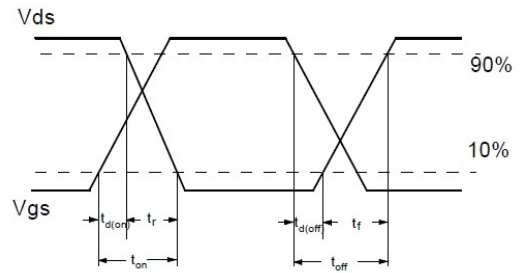
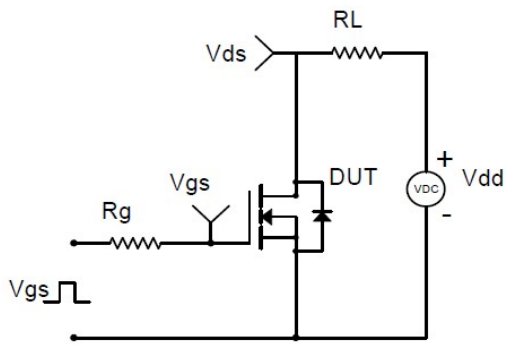
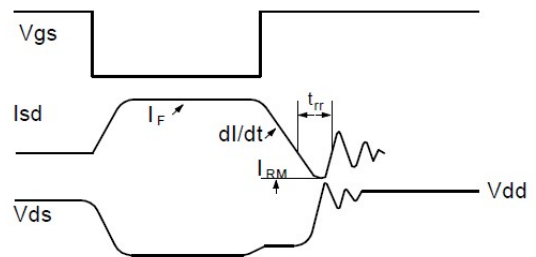
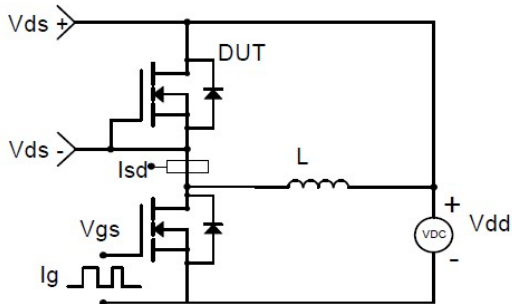


Figure9. Normalized Maximum Transient Thermal Impedance



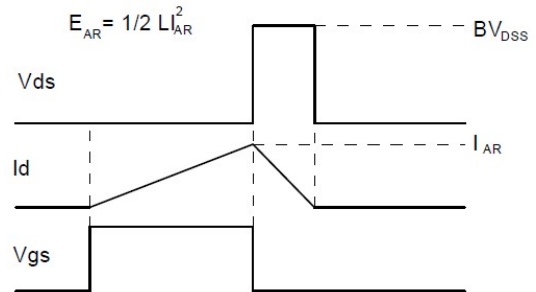
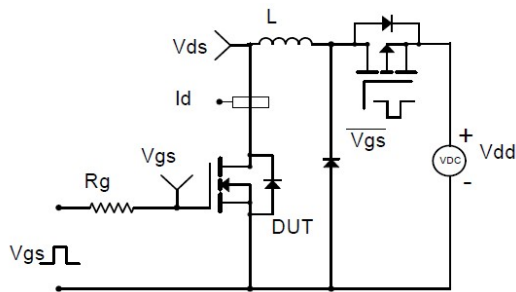
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

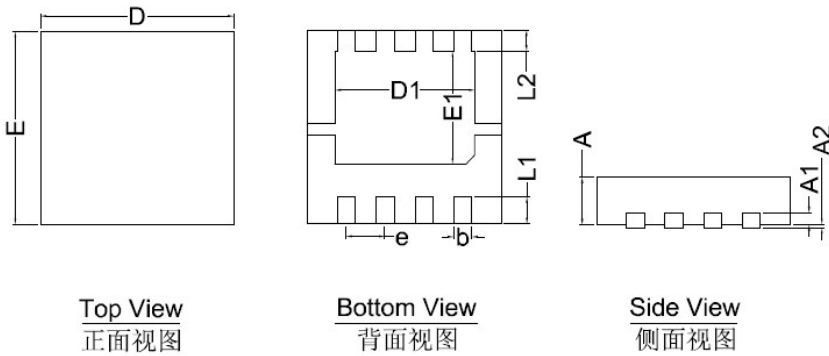


Gate Charge Test Circuit & Waveform

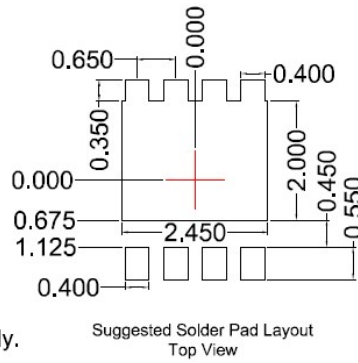


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

■DFN3.3X3.3 Package information



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
D	3.15	3.25	3.35
E	3.15	3.25	3.35
A	0,70	0,80	0,90
A1	0,20 BSC		
A2			0,10
D1	2,20	2,35	2,50
E1	1,80	1,90	2,00
L1	0,35	0,45	0,55
L2	0,35 BSC		
b	0,20	0,30	0,40
e	0,65 BSC		



- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.10\text{mm}$.
 3. The pad layout is for reference purposes only.