

JMSL0603PE

Features

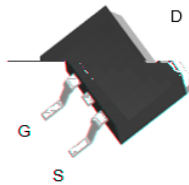
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS Tested
- 100% V_{DS} Tested
- Halogen-free; RoHS-compliant

Applications

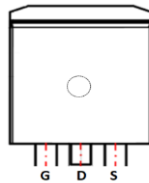
- Load Switch
- PWM Application
- Power Management

Product Summary

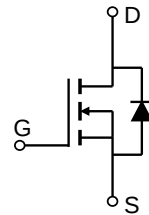
Parameters	Value	Unit
V_{DSS}	60	V
$V_{GS(th_Typ)}$	1.6	V
$I_D(@V_{GS}=10V)$	198	A
$R_{DS(ON_Typ)}(@V_{GS}=10V)$	2.2	$m\Omega$
$R_{DS(ON_Typ)}(@V_{GS}=4.5V)$	2.8	$m\Omega$



TO-263-3L



Pin Assignment



Schematic Diagram

Ordering Information

Device	Marking	MSL	Form	Package	Reel(pcs)	Per Carton (pcs)
JMSL0603PE-13	SL0603P	3	Tape&Reel	TO-263-3L	800	4000

Absolute Maximum Ratings (@ $T_C = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-to-Source Voltage	60	V
V_{GS}	Gate-to-Source Voltage	± 20	V
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$ $T_C = 100^\circ\text{C}$	A
I_{DM}	Pulsed Drain Current ⁽¹⁾	Refer to Fig.4	A
E_{AS}	Single Pulsed Avalanche Energy ⁽²⁾	324	mJ
P_D	Power Dissipation	$T_C = 25^\circ\text{C}$ $T_C = 100^\circ\text{C}$	W
T_J, T_{STG}	Junction & Storage Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

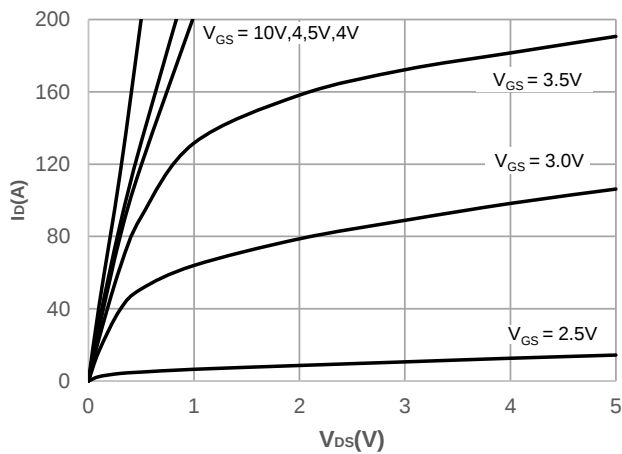
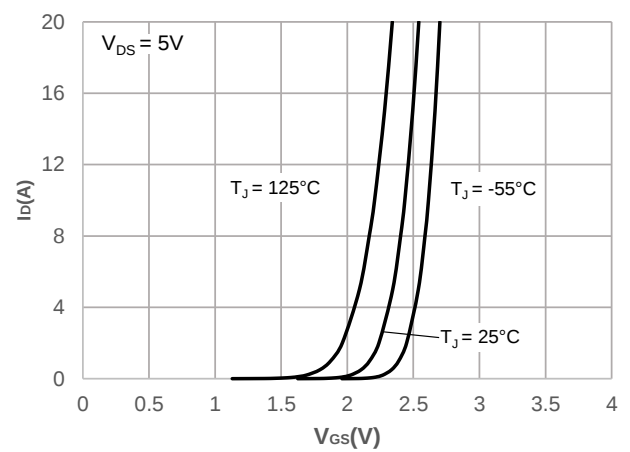
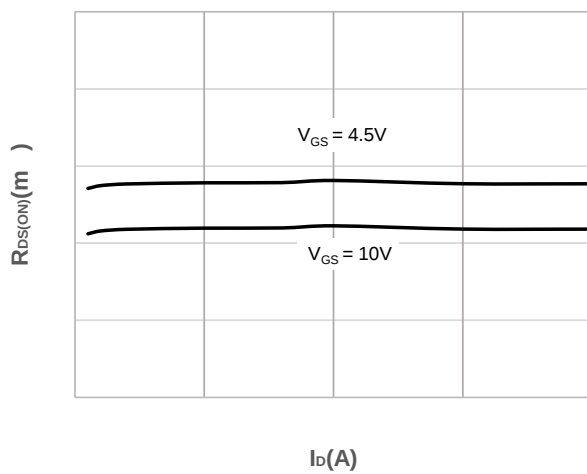
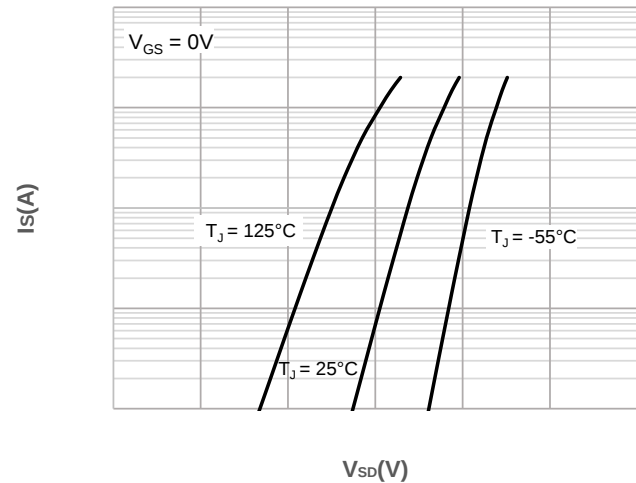
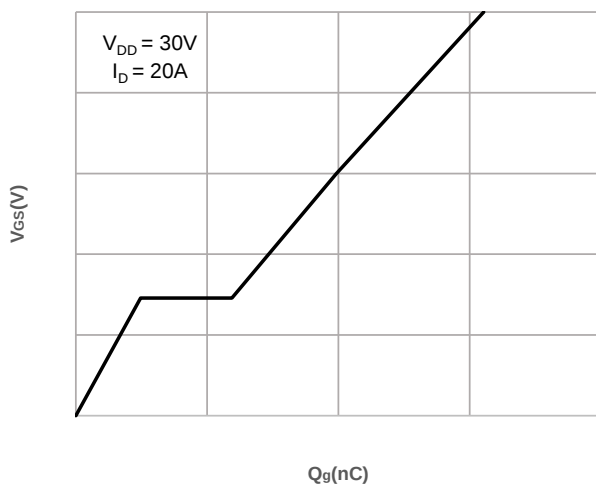
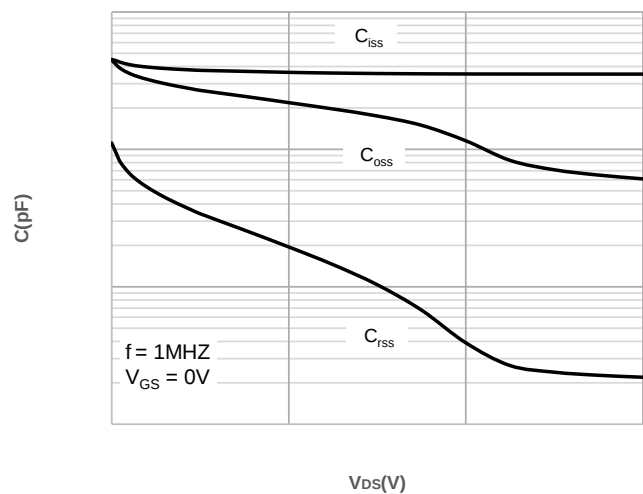
Symbol	Parameter	Max	Unit
R	Thermal Resistance, Junction to Ambient ⁽³⁾	41	$^\circ\text{C/W}$
R	Thermal Resistance, Junction to Case	0.67	$^\circ\text{C/W}$

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

Symbol	Conditions	Min.	Typ.	Max.	Unit	
Off Characteristics						
V _{(BR)DSS}		60	-	-	V	
I _{DSS}		-	-	1.0	μA	
I _{GSS}		-	-	±100	nA	
V _{GS(th)}		1.1	1.6	2.4	V	
R _{DS(ON)}		-	2.2	2.8	mΩ	
		-	2.8	3.7	mΩ	
R _g	Gate Resistance	f = 1MHz	-	2.1	-	Ω
C _{iss}			-	3566	5349	pF
C _{oss}			-	1749	2624	pF
C _{rss}			-	103	207	pF
Q _g			-	62	-	nC
Q _{gs}			-	10	-	nC
Q _{gd}			-	14	-	nC
t _{d(on)}			-	11	-	ns
t _r		V _{GS} = 10V, V _{DD} = 30V	-	28	-	ns
t _{d(off)}		I _D = 20A, R _{GEN} = 3	-	54	-	ns
t _f			-	30	-	ns
I _S			-	-	198	A
I _{SM}			-	-	793	A
V _{SD}			-		1.2	V
t _{rr}			40	57	85	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	69	-	nC

- Notes:
- 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 - 2. E_{AS} condition: Starting T_J=25C, V_{DD}=30V, V_G=10V, R_G=25ohm, L=3mH, I_{AS}=14.7A, V_{DD}=0V during time in avalanche.
 - 3. R is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB.
 - 4. Pulse Test: Pulse Width ≤ 0.5%.

Typical Performance Characteristics

Figure 5: Output Characteristics

Figure 6: Typical Transfer Characteristics

Figure 7: On-resistance vs. Drain Current

Figure 8: Body Diode Characteristics

Figure 9: Gate Charge Characteristics

Figure 10: Capacitance Characteristics


Typical Performance Characteristics

Figure 11: Normalized Breakdown voltage vs. Junction Temperature

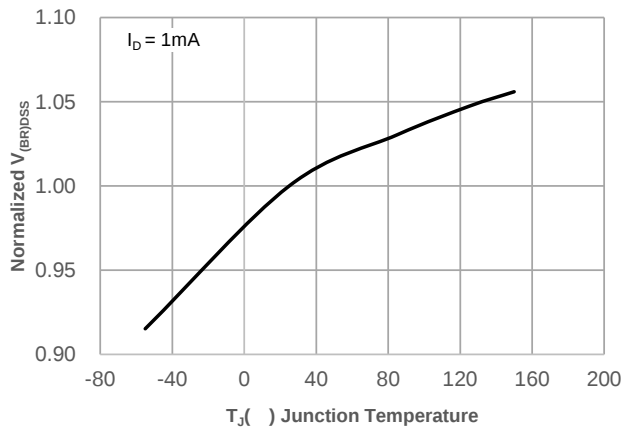


Figure 12: Normalized on Resistance vs. Junction Temperature

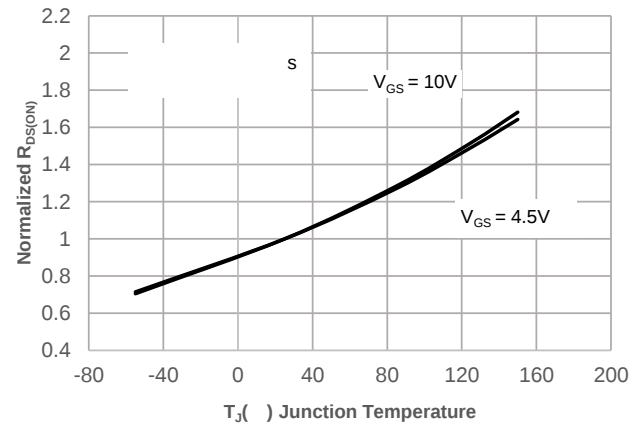


Figure 14: $R_{DS(ON)}$ vs. V_{GS}

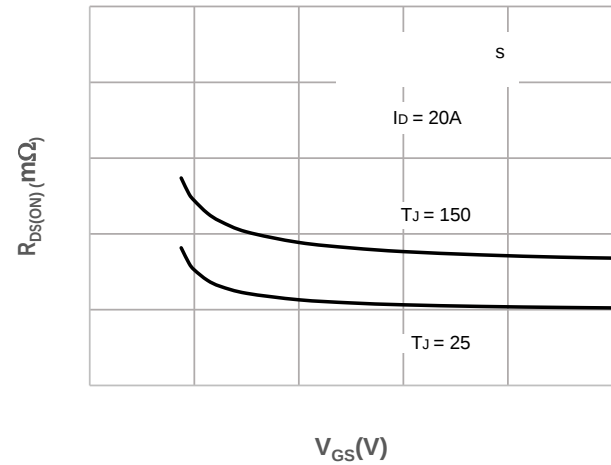
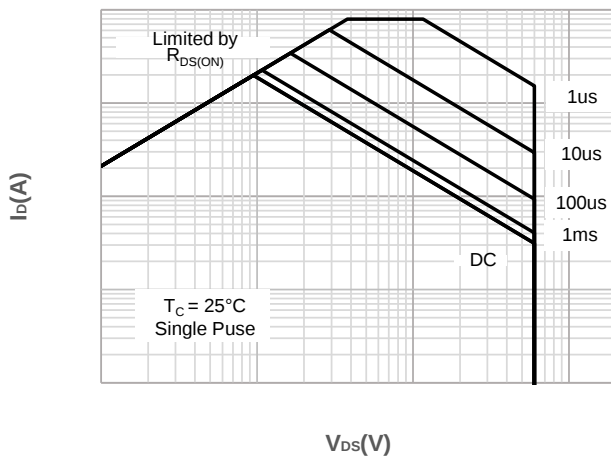


Figure 15: Maximum Safe Operating Area



Test Circuit



Figure 1: Gate Charge Test Circuit & Waveform

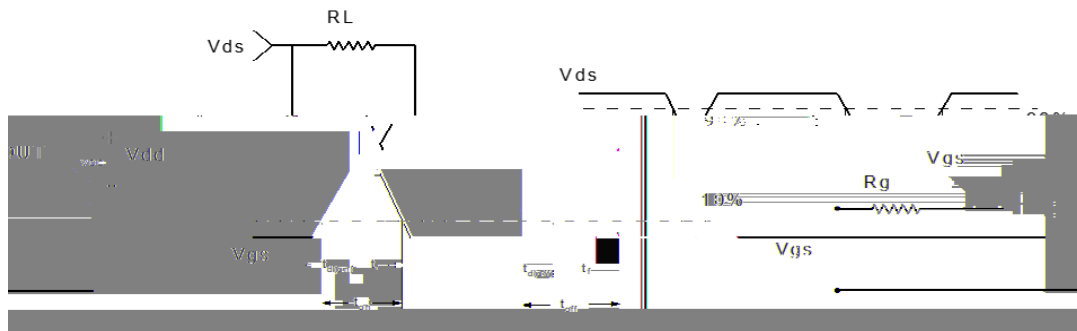


Figure 2: Resistive Switching Test Circuit & Waveform

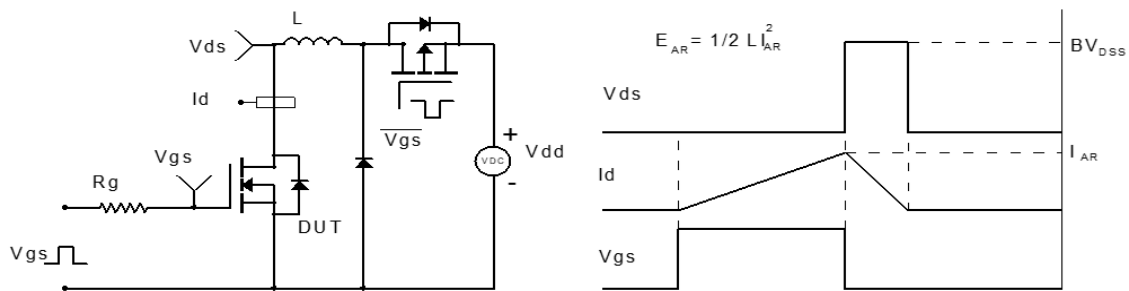


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

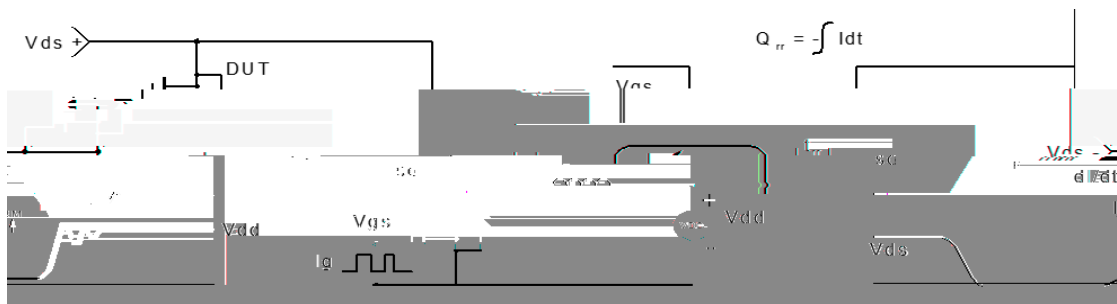


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(TO-25263-3L)

Package Outline

