

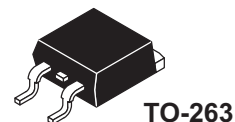


ON Semiconductor®

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SMP3003

P-Channel Power MOSFET -75V, -100A, 8.0mΩ, TO-263-2L/TO-263



TO-263

Features

- ON-resistance $R_{DS(on)1}=6.2\text{m}\Omega$ (typ.)
- Input capacitance $C_{iss}=13400\text{pF}$ (typ.)
- 4V drive

Specifications

Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain to Source Voltage	V_{DS}		-75	V
Gate to Source Voltage	V_{GS}		± 20	V
Drain Current (DC)	I_D		-100	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	-400	A
Allowable Power Dissipation	P_D	$T_c=25^\circ\text{C}$	90	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *1	E_{AS}		468	mJ
Avalanche Current *2	I_{AV}		-60	A

Note : *1 $V_{DD}=-48\text{V}$, $L=100\mu\text{H}$, $I_{AV}=-60\text{A}$ (Fig.1)*2 $L \leq 100\mu\text{H}$, Single pulse

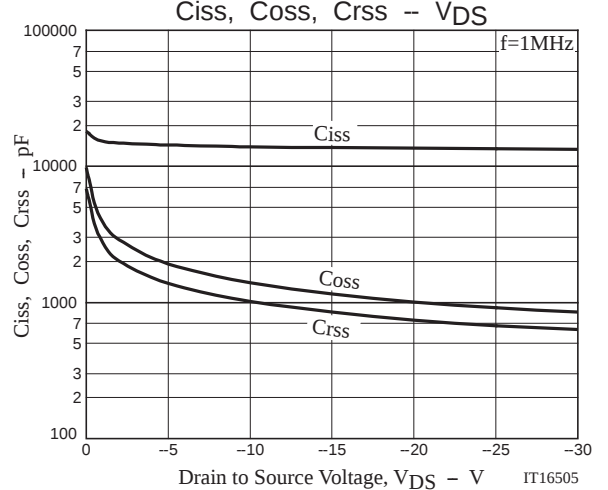
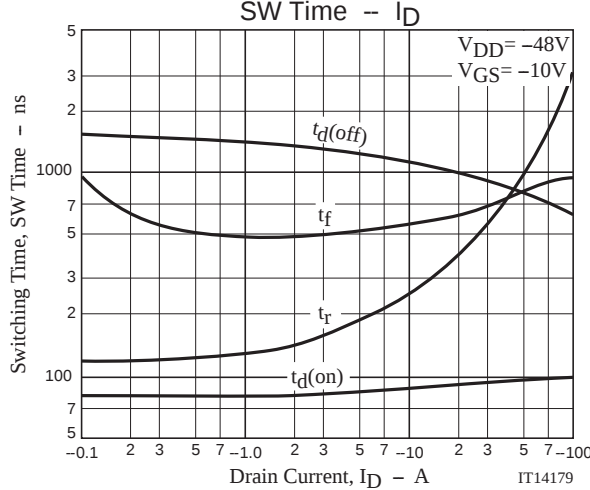
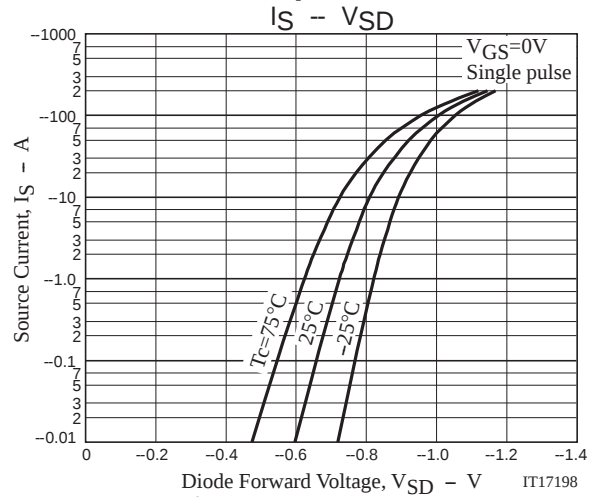
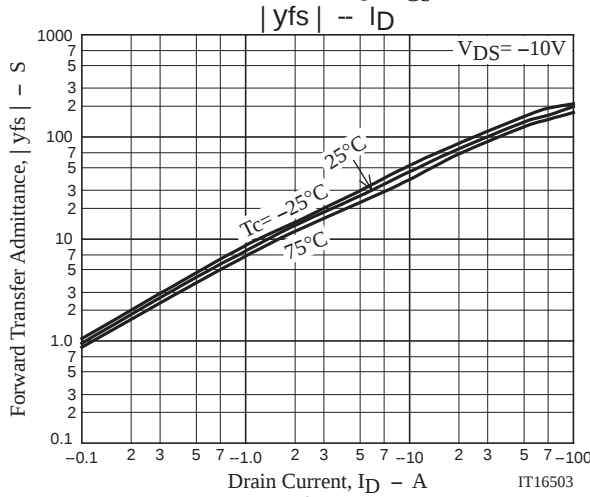
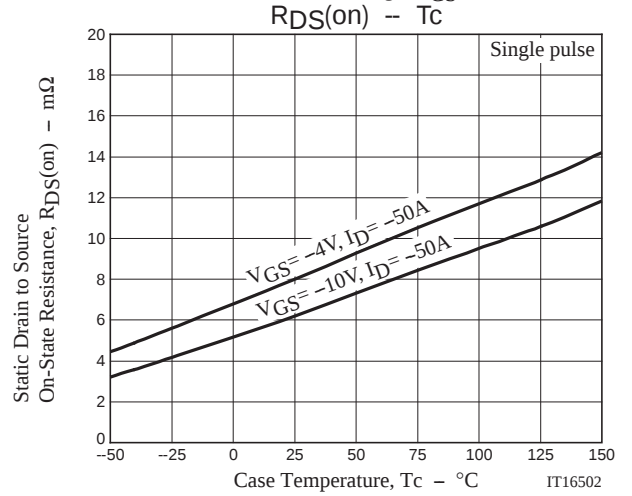
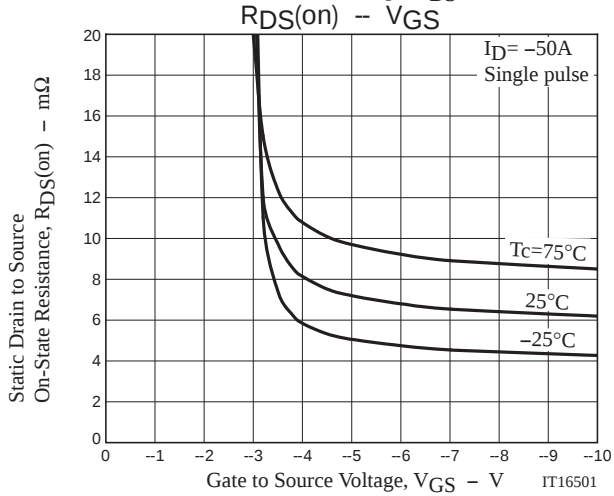
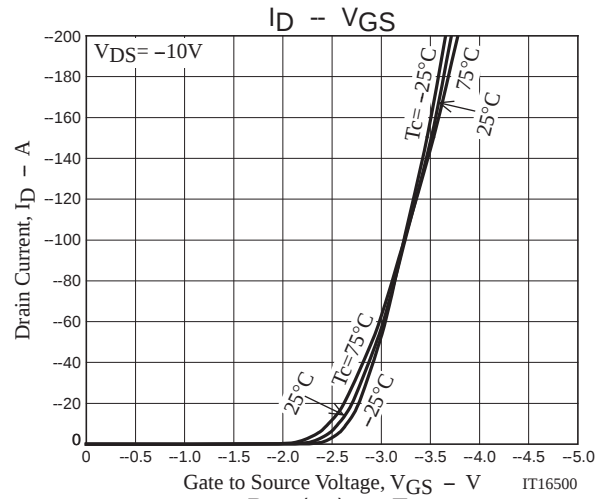
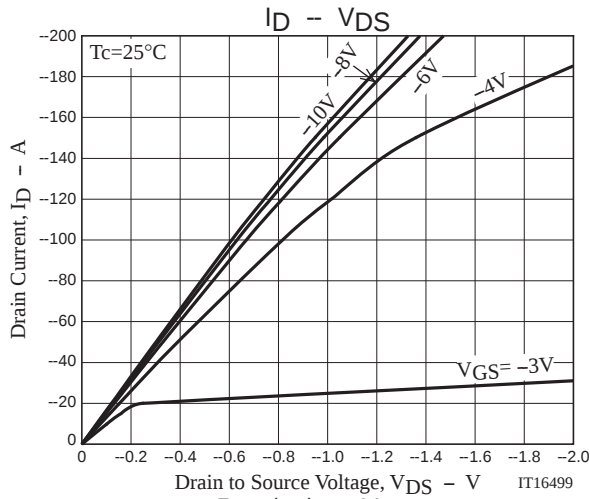
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

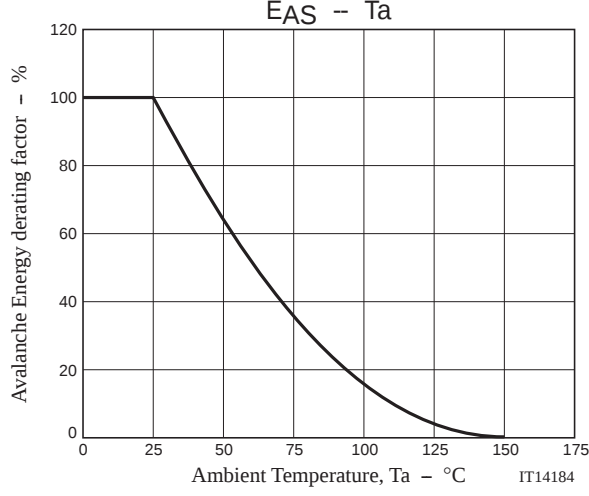
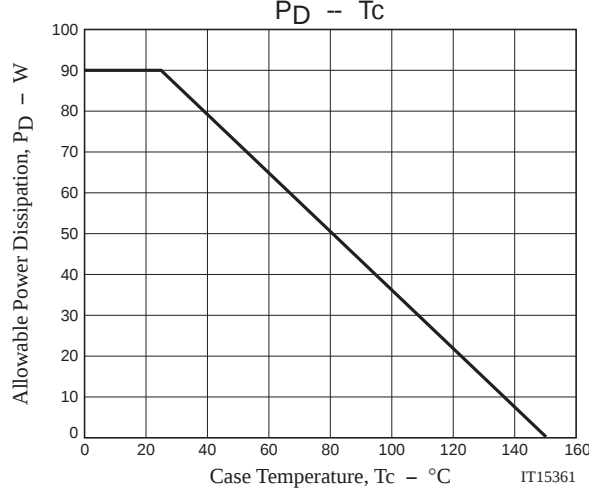
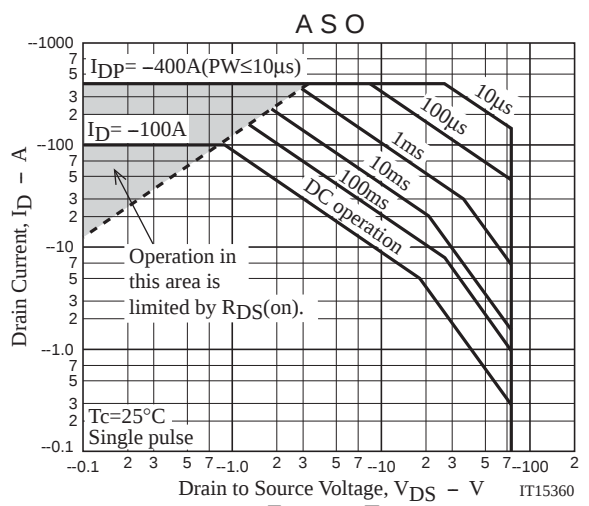
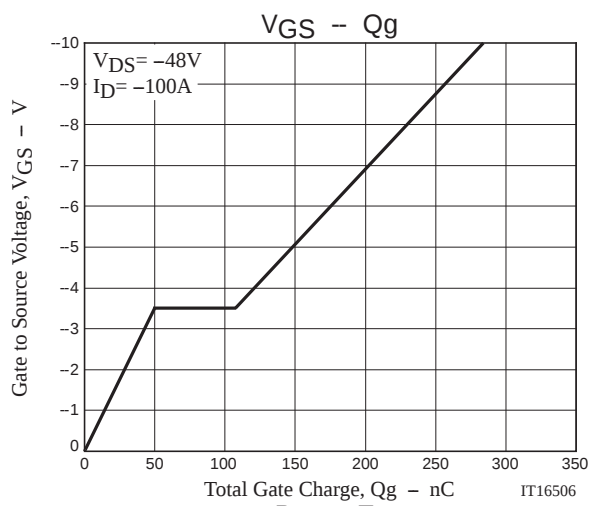
Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1\text{mA}$, $V_{GS}=0\text{V}$	-75			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-75\text{V}$, $V_{GS}=0\text{V}$			-10	μA
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16\text{V}$, $V_{DS}=0\text{V}$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10\text{V}$, $I_D=-1\text{mA}$	-1.2		-2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10\text{V}$, $I_D=-50\text{A}$		140		S
Static Drain to Source On-State Resistance	$R_{DS(on)1}$	$I_D=-50\text{A}$, $V_{GS}=-10\text{V}$		6.2	8.0	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=-50\text{A}$, $V_{GS}=-4\text{V}$		8.0	11	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS}=-20\text{V}$, $f=1\text{MHz}$		13400		pF
Output Capacitance	C_{oss}			1000		pF
Reverse Transfer Capacitance	C_{rss}			740		pF
Turn-ON Delay Time	$t_d(on)$			95		ns
Rise Time	t_r	See Fig.2		1000		ns
Turn-OFF Delay Time	$t_d(off)$			800		ns
Fall Time	t_f			820		ns
Total Gate Charge	Q_g	$V_{DS}=-48\text{V}$, $V_{GS}=-10\text{V}$, $I_D=-100\text{A}$		280		nC
Gate to Source Charge	Q_{gs}			50		nC
Gate to Drain "Miller" Charge	Q_{gd}			55		nC
Diode Forward Voltage	V_{SD}	$I_S=-100\text{A}$, $V_{GS}=0\text{V}$		-1.0	-1.5	V
Reverse Recovery Time	t_{rr}	See Fig.3		120		ns
Reverse Recovery Charge	Q_{rr}	$I_S=-100\text{A}$, $V_{GS}=0\text{V}$, $di/dt=-100\text{A}/\mu\text{s}$		380		nC

ORDERING INFORMATION

See detailed ordering and shipping information on page 6 of this data sheet.





Package Dimensions

SMP3003-DL-1E

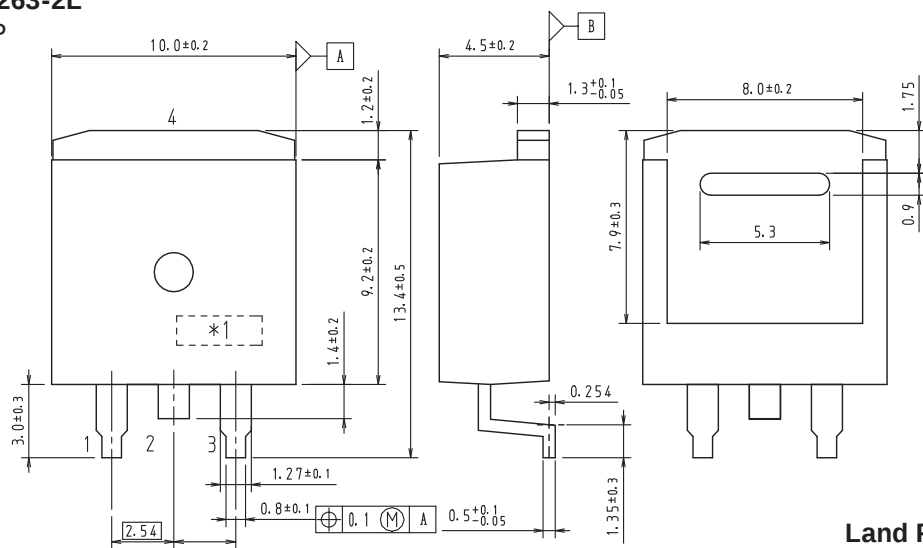
D2PAK/TO-263-2L

CASE 418AP

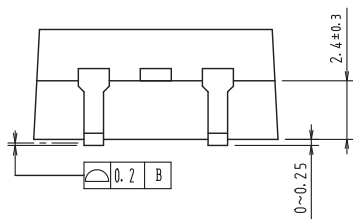
ISSUE O

Unit : mm

- 1: Gate
- 2: Drain
- 3: Source
- 4: Drain

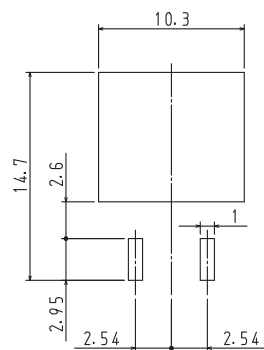


Land Pattern Example

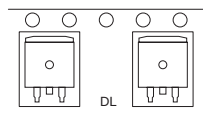


1. These dimension do not include mold protrusion
2. Pin2 is idle pin with electrical designation only carried

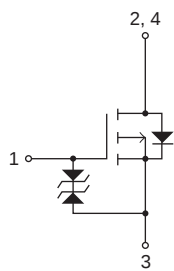
*1:Lot indication



Packing Type: DL



Electrical Connection

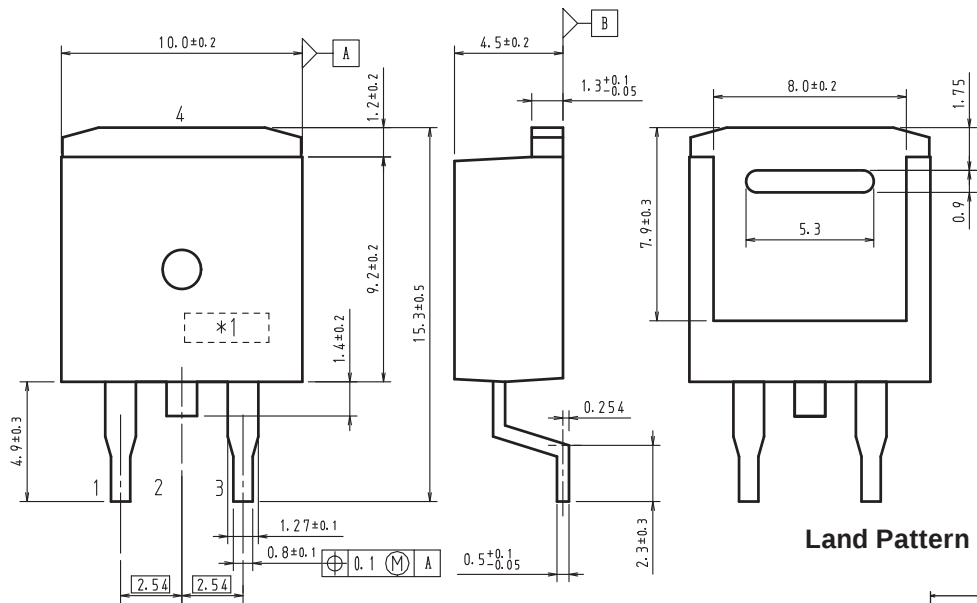


SMP3003

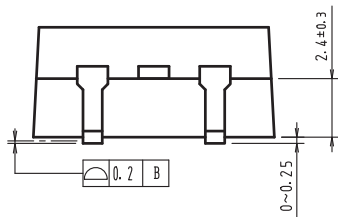
Package Dimensions
SMP3003-TL-1E

Unit : mm

- 1: Gate
- 2: Drain
- 3: Source
- 4: Drain

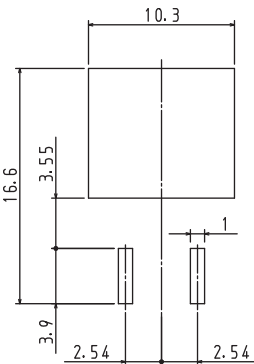


Land Pattern Example

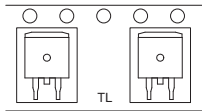


- 1. These dimension do not include mold protrusion
- 2. Pin2 is idle pin with electrical designation only carried

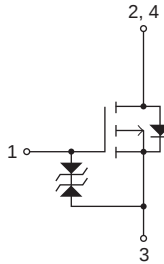
*1: Lot indication



Packing Type: TL



Electrical Connection



SMP3003

Ordering & Package Information

Device	Package	Shipping	memo
SMP3003-DL-1E	TO-263-2L SC-83, TO-263	800 pcs./reel	Pb-Free
SMP3003-TL-1E	TO-263		

Marking

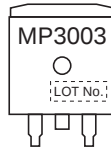


Fig.1 Unclamped Inductive Switching Test Circuit

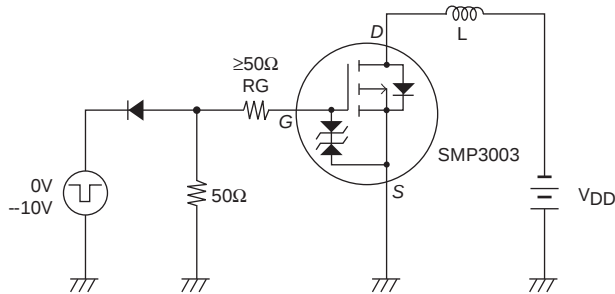


Fig.2 Switching Time Test Circuit

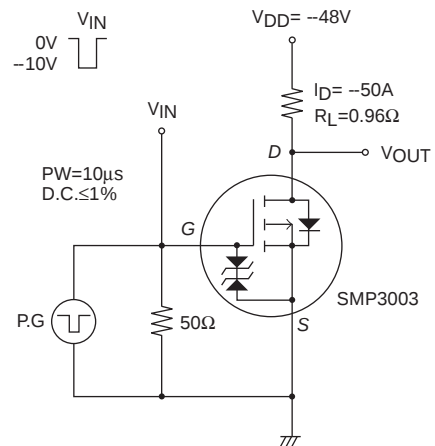
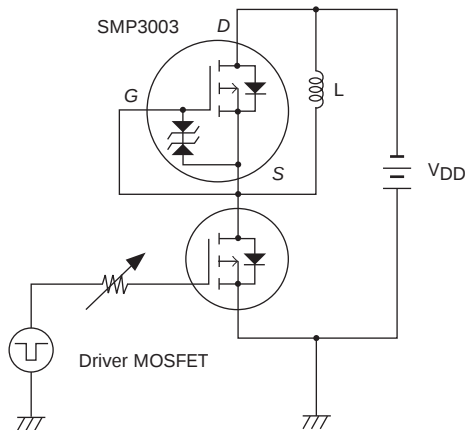


Fig.3 Reverse Recovery Time Test Circuit



Note on usage : Since the SMP3003 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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