P-Channel Enhancement Mode MOSFET TDM2301

Features

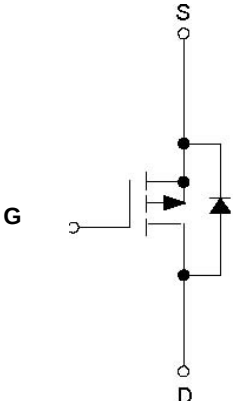
- -20V/-3A ,
  $R_{DS(ON)}$=72mΩ(typ.) @ V_{GS}=-4.5V
  $R_{DS(ON)}$=98mΩ(typ.) @ V_{GS}=-2.5V
- Super High Dense Cell Design
- Reliable and Rugged
- Lead Free Available (RoHS Compliant)

Applications

- Power Management in Notebook Computer , Portable Equipment and Battery Powered Systems.

Pin Description

Top View of SOT23-3L



P-Channel MOSFET

Ordering and Marking Information

TDM2301□□-□□□ Lead Free Code Handing Code Temp. Range Packge Code	Packge Code A: SOT23-3L Operating Junction Temp. Rang C: -55 to 150°C Handing Code TU:Tube TR:Tape & Reel Lead Free Code: L:Lead Free Device Blank:Original Device
TDM2301 T01 X	X:Date Code

Note: TECHCODE lead-free products contain molding compounds/die attach materials and 100% matte in plate termination finish; which are fully compliant with RoHS and compatible with both SnPb and lead-free soldiering operations. TECHCODE lead-free products meet or exceed the lead-free requirements of IPC/JEDEC J STD-020C for MSL classification at lead-free peak reflow temperature.

TECHCODE reserves the right to make changes to improve reliability or manufacturability without notice, and advise customers to obtain the latest version of relevant information to verify before placing orders.

P-Channel Enhancement Mode MOSFET TDM2301

Absolute Maximum Ratings (T_A = 25°C unless otherwise noted)

Symbol	Parameter		Rating	Unit
VDSS	Drain-Source Voltage		-20	V
VGSS	Gate-Source Voltage		±12	
ID*	Continuous Drain Current		-3	A
IDM*	300μs Pulsed Drain Current	VGS=-4.5V	-10	
IS*	Diode Continuous Forward Current		-1	A
TJ	Maximum Junction Temperature		150	°C
TSTG	Storage Temperature Range		-55 to 150	
PD*	Maximum Power Dissipation	TA=25°C	0.83	W
		TA=100°C	0.3	
RθJA*	Thermal Resistance-Junction to Ambient		150	°C/W

Note: *

Surface Mounted on 1in^2 pad area, t ≤ 10sec.

Electrical Characteristics (T_A = 25°C unless otherwise noted)

			TDM2301			
Symbol	**Parameter**	**Test Condition**	**Min.**	**Typ.**	**Max.**	**Unit**
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250μA	-20			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-16V, V_{GS}=0V			-1	μA
		T_J=85°C			-30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250μA	-0.5	-0.6	-1	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V, V_{DS}=0V			±100	nA
$R_{DS(ON)}$ a	Drain-Source On-state Resistance	V_{GS}=-4.5V, I_{DS}=-3A		72	90	mΩ
		V_{GS}=-2.5V, I_{DS}=-2A		98	115	
V_{SD} a	Diode Forward Voltage	I_{SD}=-1.25A, V_{GS}=0V		-0.7	-1.3	V
Gate Charge Characteristics b						
Q_g	Total Gate Charge	V_{DS}=-10V, V_{GS}=-4.5V, I_{DS}=-3A		9	12	nC
Q_{gs}	Gate-Source Charge			3		
Q_{gd}	Gate-Drain Charge			1.2		

Electrical Characteristics (Cont.)(T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition	TDM2301			Unit
			Min.	Typ.	Max.	
Dynamic Characteristics[b]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		11		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-15V, Frequency=1.0MHz		550		PF
C_{oss}	Output Capacitance			120		
C_{rss}	Reverse Transfer Capacitance			80		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=-10V, R_L=10Ω, I_{DS}=-1A, V_{GEN}=-4.5V, R_G=6Ω		13	24	Ns
T_r	Turn-on Rise Time			36	66	
$t_{d(OFF)}$	Turn-off Delay Time			45	82	
T_f	Turn-off Fall Time			37	68	

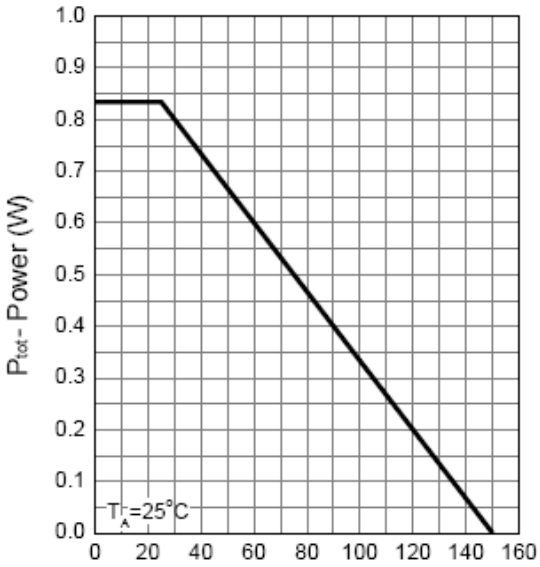
Notes:

a : Pulse test ; pulse width≤ 300μs, duty cycle≤ 2%.

b : Guaranteed by design, not subject to production testing.

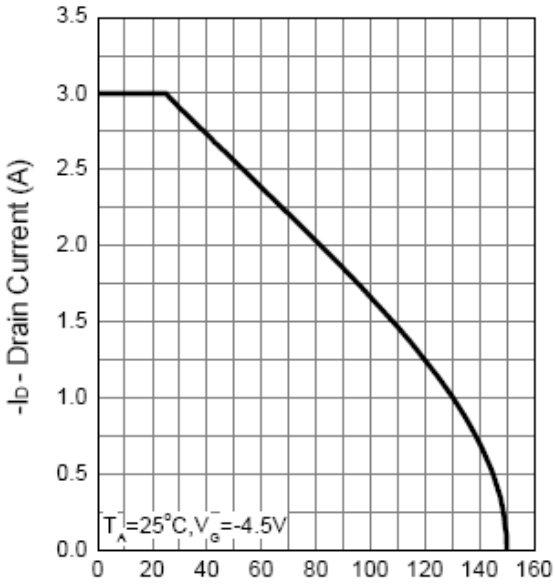
Typical Characteristics

Power Dissipation



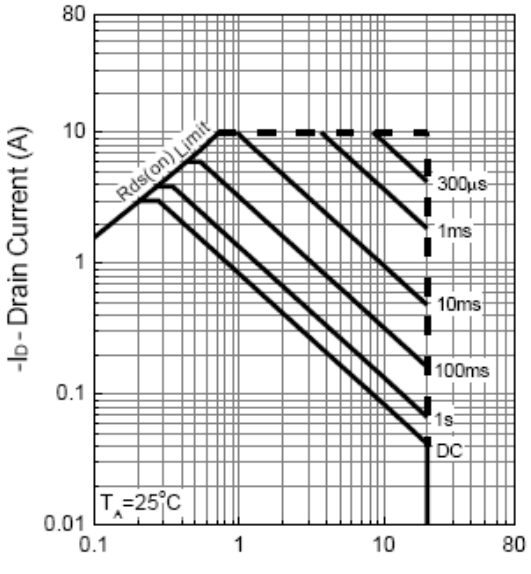
Tj - Junction Temperature (°C)

Drain Current



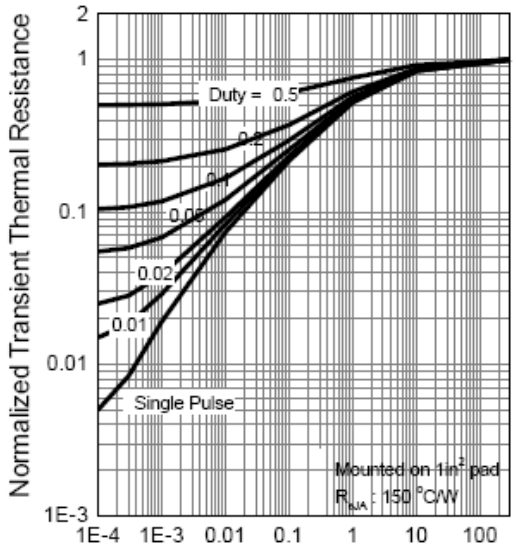
Tj - Junction Temperature (°C)

Safe Operation Area



$-V_{DS}$ - Drain - Source Voltage (V)

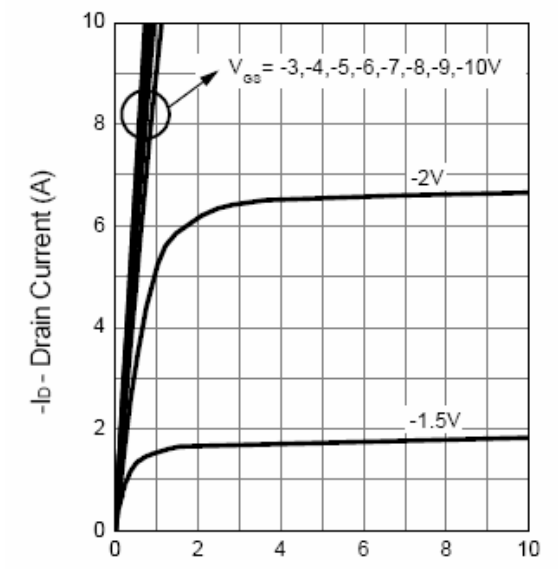
Thermal Transient Impedance



Square Wave Pulse Duration (sec)

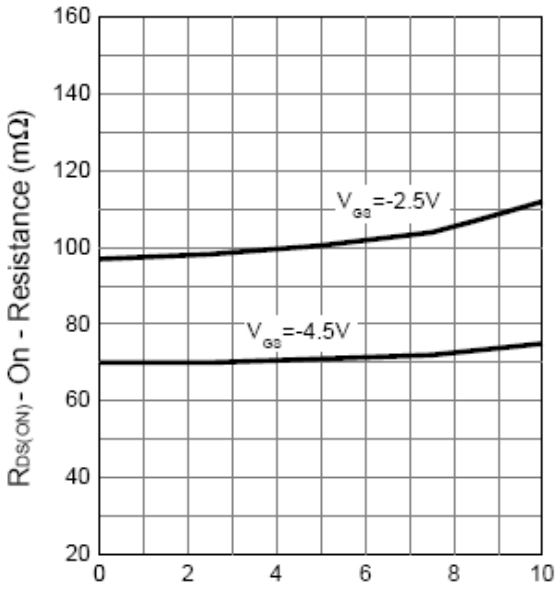
Typical Characteristics (Cont.)

Output Characteristics



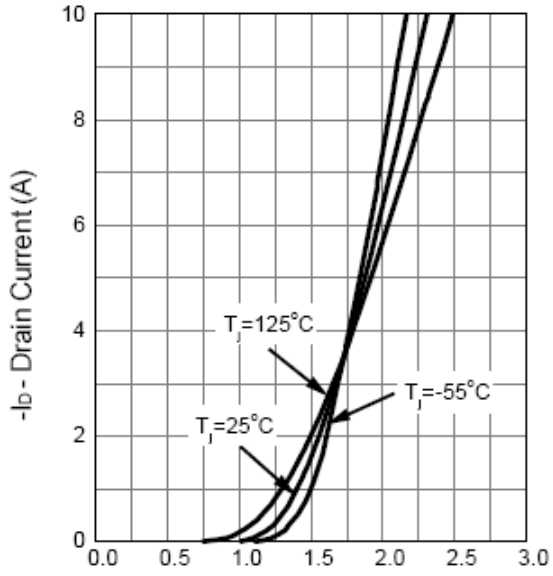
$-V_{DS}$ - Drain - Source Voltage (V)

Drain-Source On Resistance



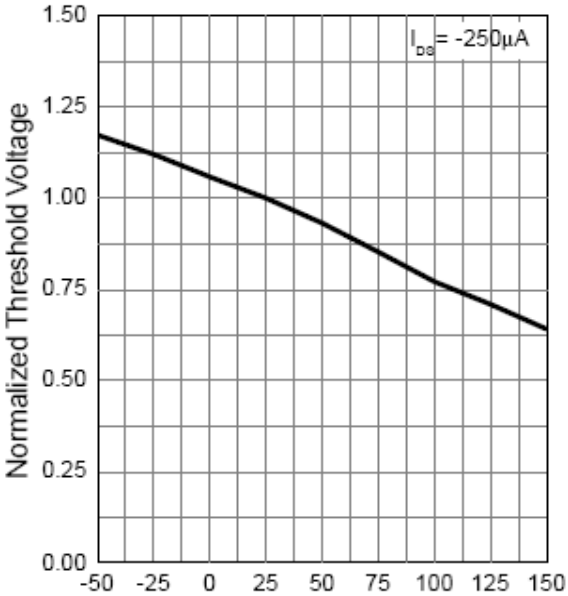
$-I_D$ - Drain Current (A)

Transfer Characteristics



$-V_{GS}$ - Gate - Source Voltage (V)

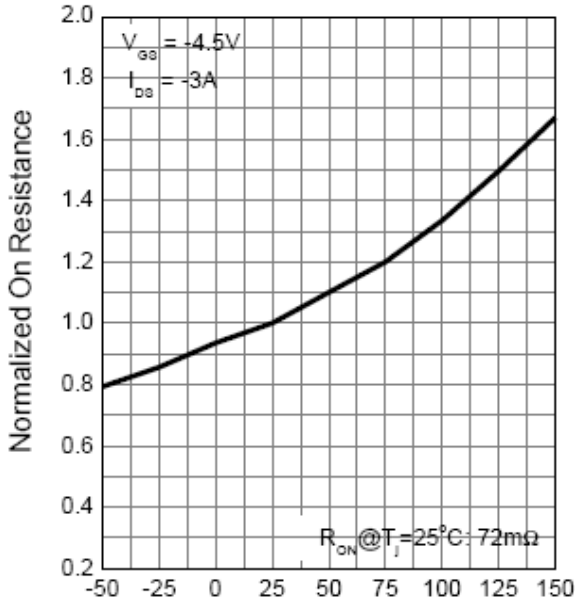
Gate Threshold Voltage



T_j - Junction Temperature (°C)

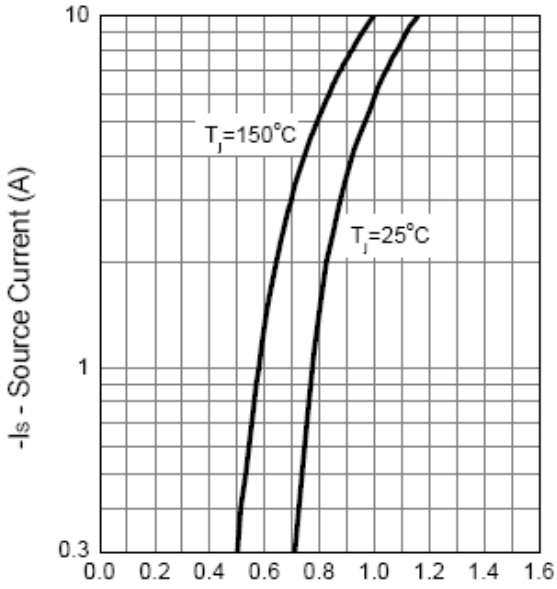
Typical Characteristics (Cont.)

Drain-Source On Resistance



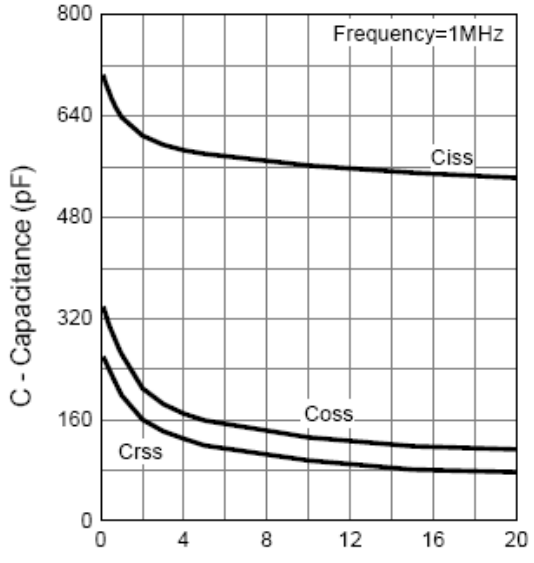
Tj - Junction Temperature (°C)

Source-Drain Diode Forward



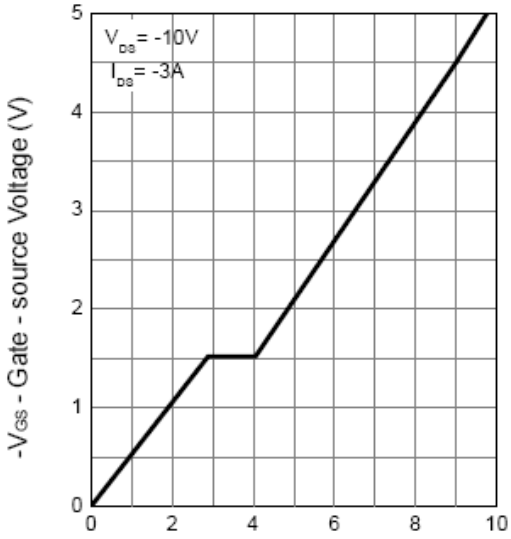
$-V_{SD}$ - Source - Drain Voltage(V)

Capacitance



$-V_{DS}$ - Drain - Source Voltage (V)

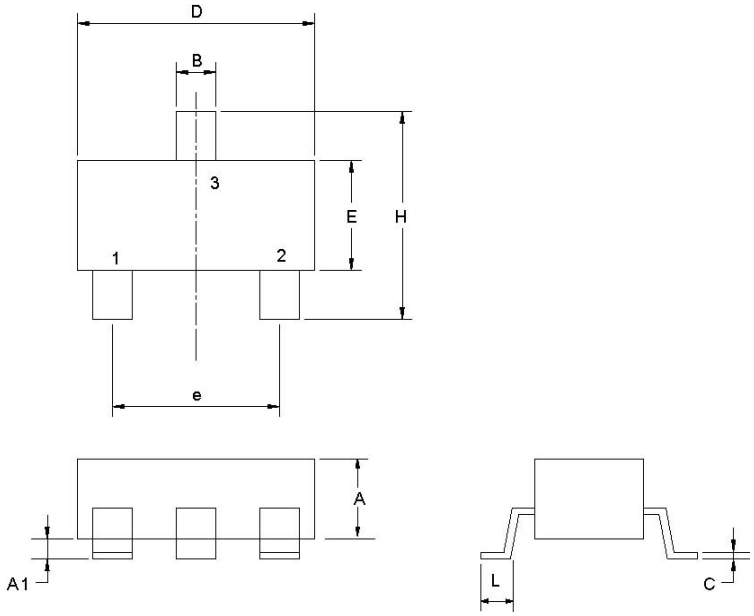
Gate Charge



Q_G - Gate Charge (nC)

Packaging Information

SOT23-3L



Dim	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.00	1.30	0.039	0.051
A1	0.00	0.10	0.000	0.004
B	0.35	0.51	0.014	0.020
C	0.10	0.25	0.004	0.010
D	2.70	3.10	0.106	0.122
E	1.40	1.80	0.055	0.071
e	1.90/2.1 BSC.		0.075/0.083 BSC.	
H	2.40	3.00	0.094	0.118
L	0.37		0.015	