Leiditech

LM6403

P-Channel Enhancement Mode Power MOSFET

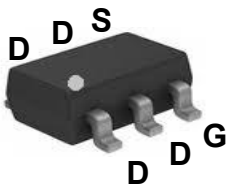
General Description

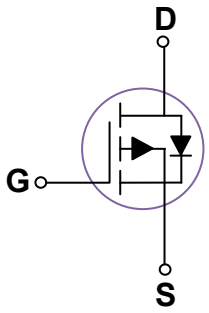
These P-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

Features

V_{DS}	-30V
I_D (at V_{GS}=-10V)	-6A
$R_{DS(ON)}$ (at V_{GS}=-10V)	30mΩ(Max)
$R_{DS(ON)}$ (at V_{GS}=-4.5V)	45mΩ(Max)

SOT23-6





Absolute Maximum Ratings T_A=25°C unless otherwise noted

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current-Continuous	TC=25°C	I_D	-6.0	A
	TC=100°C	I_D	-3.6	A
Drain Current – Pulsed		I_{DM}	-24	A
Maximum Power Dissipation		P_D	1.56	W
Junction and Storage Temperature Range		T_J,T_{STG}	-55 To 150	℃

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance junction-case	$R_{\theta Jc}$		1.1	℃ /W
Thermal Resistance unction-to-Ambient	$R_{\theta JA}$		60	℃ /W

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Electrical Characteristics (TJ=25℃ unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
STATIC PARAMETERS						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=-250μA	-30			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-30V,V_{GS}=0V			1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250μA	-0.5	-1.0	-1.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=-10V, I_D=-4.0A		25	30	mΩ
		V_{GS}=-4.5V, I_D=-2.0A		35	45	mΩ
DYNAMIC PARAMETERS						
C_{lss}	Input Capacitance	V_{DS}=-15V,V_{GS}=0V, F=1.0MHz		757		pF
C_{oss}	Output Capacitance			122		pF
C_{rss}	Reverse Transfer Capacitance			88		pF
SWITCHING PARAMETERS						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=-15V,I_D=-1A, V_{GS}=-10V, R_G=3Ω		4.6		nS
t_r	Turn-on Rise Time			14		nS
$t_{d(off)}$	Turn-Off Delay Time			34		nS
t_f	Turn-Off Fall Time			18		nS
Q_g	Total Gate Charge	V_{DS}=-15V,I_D=-5A, V_{GS}=-4.5V		8		nC
Q_{gs}	Gate-Source Charge			3.3		nC
Q_{gd}	Gate-Drain Charge			2.3		nC
V_{SD}	Diode Forward Voltage	V_{GS}=0V,I_{SD}=-1A		0.72	1.4	V

Note:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

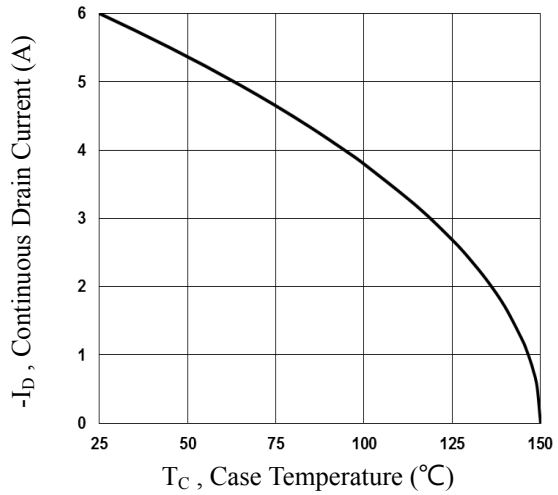


Fig.1 Continuous Drain Current vs. T_C

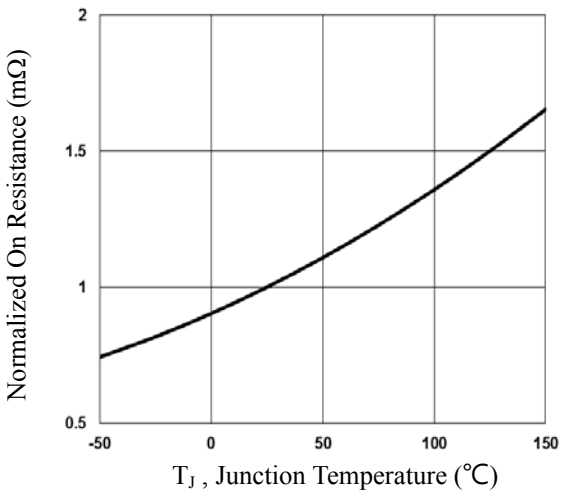


Fig.2 Normalized RDSON vs. T_J

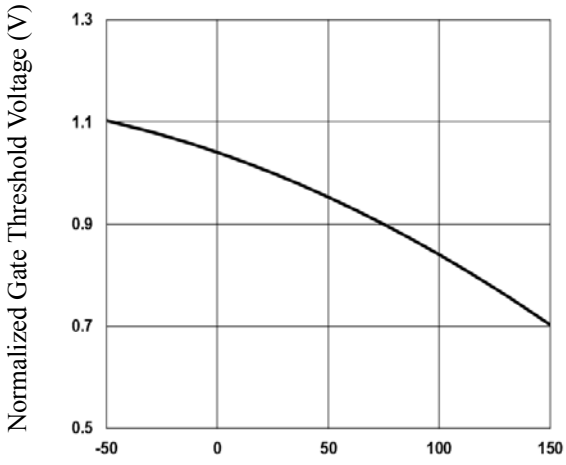


Fig.3 Normalized V_{th} vs. T_J

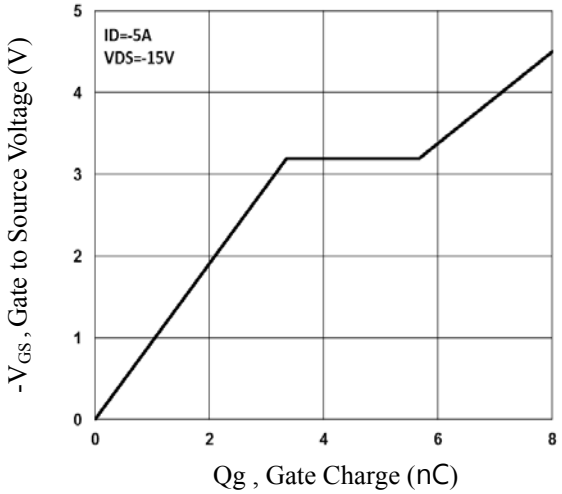


Fig.4 Gate Charge Waveform

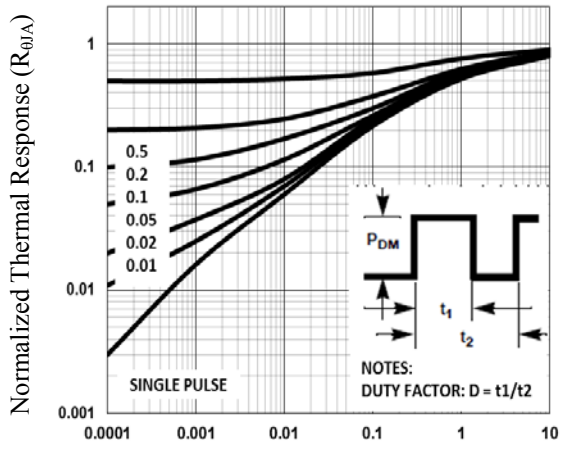


Fig.5 Normalized Transient Impedance

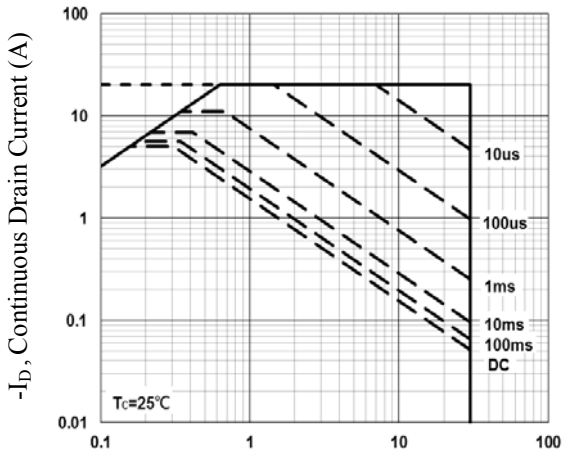


Fig.6 Maximum Safe Operation Area

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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

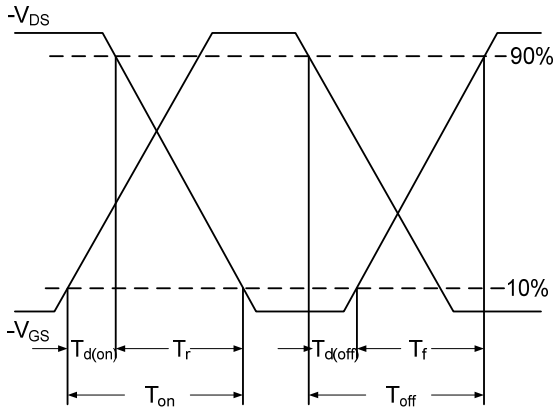


Fig.7 Switching Time Waveform

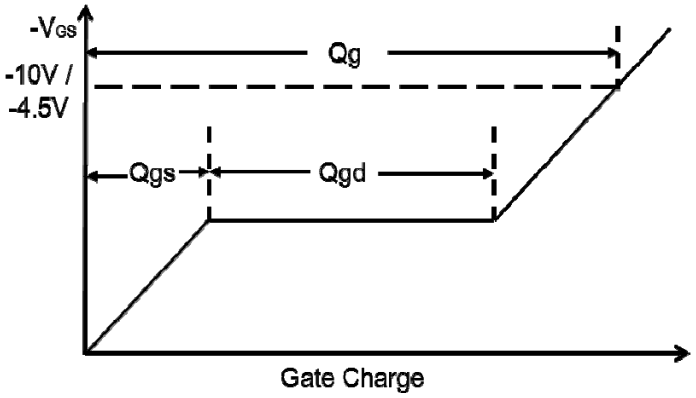
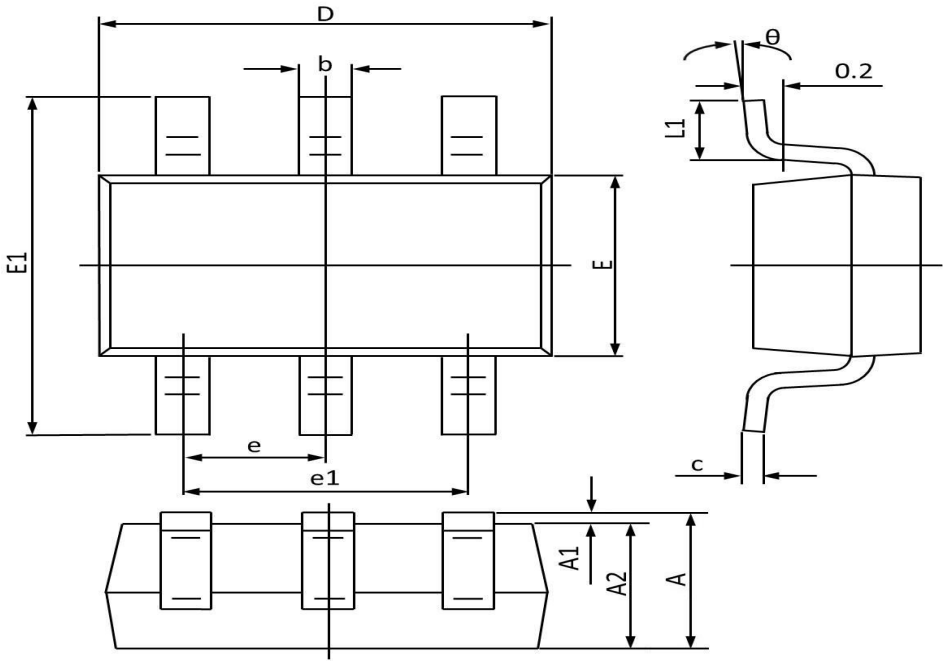


Fig.8 Gate Charge Waveform

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SOT23-6 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.450	-	0.057	-
A1	0.100	0.000	0.004	0.000
A2	1.300	1.050	0.051	0.041
b	0.500	0.300	0.020	0.012
c	0.200	0.100	0.008	0.004
D	3.100	2.700	0.122	0.106
E	1.800	1.400	0.071	0.055
E1	3.000	2.600	0.118	0.102
e	0.95BSC		0.037BSC	
e1	2.000	1.800	0.079	0.071
L1	0.600	0.300	0.024	0.012
θ	10°	0°	10°	0°

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