

P-Channel 30-V (D-S) MOSFET

Key Features:

- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (m Ω)	I_D (A)
-30	24 @ $V_{GS} = -10V$	-7
	37 @ $V_{GS} = -4.5V$	-5

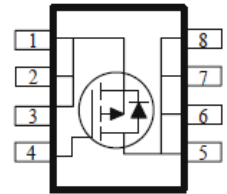
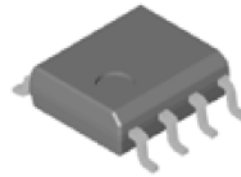
Typical Applications:

- Load Switches
- DC/DC Conversion
- Motor Drives



RoHS
COMPLIANT
HALOGEN
FREE

SO-8



ORDERING INFORMATION

Device	Marking	Shipping
LP4435T1G	LP4435	4000/Tape&Reel

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	Limit	Units
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^a	$T_A=25^\circ\text{C}$	-9.5	A
	$T_A=70^\circ\text{C}$	-7	
Pulsed Drain Current ^b	I_{DM}	-38	
Continuous Source Current (Diode Conduction) ^a	I_S	-2.1	A
Power Dissipation ^a	$T_A=25^\circ\text{C}$	3.1	W
	$T_A=70^\circ\text{C}$	2.2	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS				
Parameter		Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	t ≤ 10 sec	R _{θJA}	40	°C/W
	Steady State		80	

Notes

- Surface Mounted on 1" x 1" FR4 Board.
- Pulse width limited by maximum junction temperature

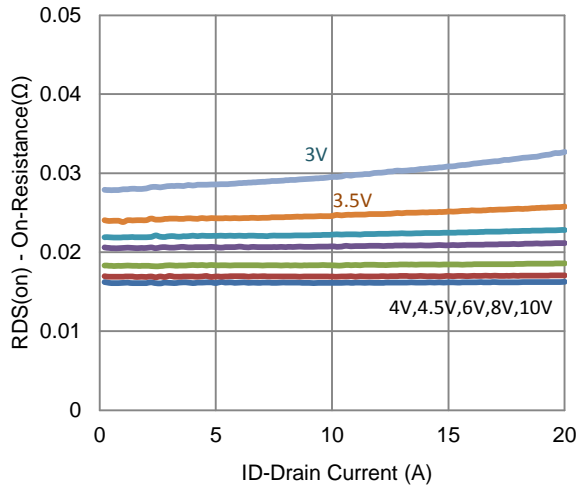
Electrical Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 uA	-1	-1.6	-3	V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -24 V, V _{GS} = 0 V			-1	uA
		V _{DS} = -24 V, V _{GS} = 0 V, T _J = 55°C			-10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} = -5 V, V _{GS} = -10 V	-20			A
Drain-Source On-Resistance ^a	r _{DS(on)}	V _{GS} = -10 V, I _D = -7 A		19	24	m
		V _{GS} = -4.5 V, I _D = -5A		27	37	
Forward Transconductance ^a	g _{fs}	V _{DS} = -15 V, I _D = -7 A		8		S
Diode Forward Voltage ^a	V _{SD}	I _S = -1 A, V _{GS} = 0 V			-1.5	V
Dynamic ^b						
Total Gate Charge	Q _g	V _{DS} = -15 V, V _{GS} = -4.5 V, I _D = -7 A		19		nC
Gate-Source Charge	Q _{gs}			4.7		
Gate-Drain Charge	Q _{gd}			8.4		
Turn-On Delay Time	t _{d(on)}	V _{DS} = -15 V, R _L = 2.1 Ω, I _D = -7 A, V _{GEN} = -10 V, R _{GEN} = 6 Ω		6		ns
Rise Time	t _r			5		
Turn-Off Delay Time	t _{d(off)}			55		
Fall Time	t _f			21		
Input Capacitance	C _{iss}	V _{DS} = -15 V, V _{GS} = 0 V, f = 1 Mhz		1539		pF
Output Capacitance	C _{oss}			163		
Reverse Transfer Capacitance	C _{rss}			151		

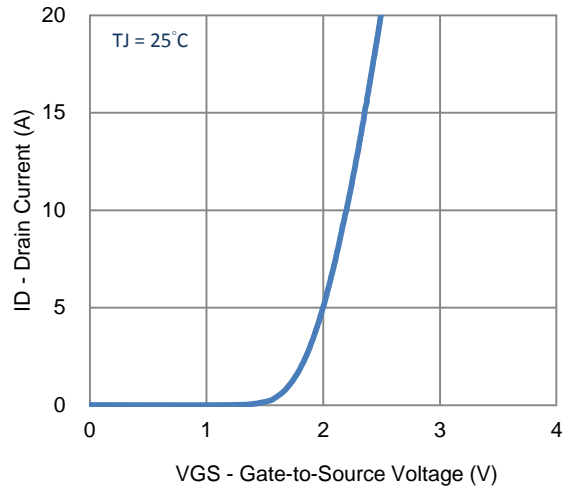
Notes

- Pulse test: PW ≤ 300us duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

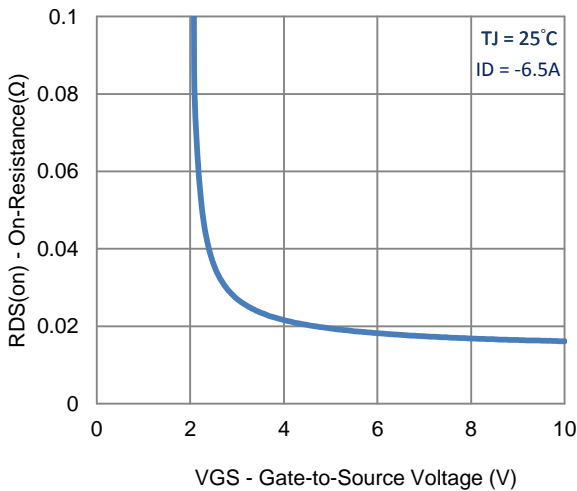
Typical Electrical Characteristics



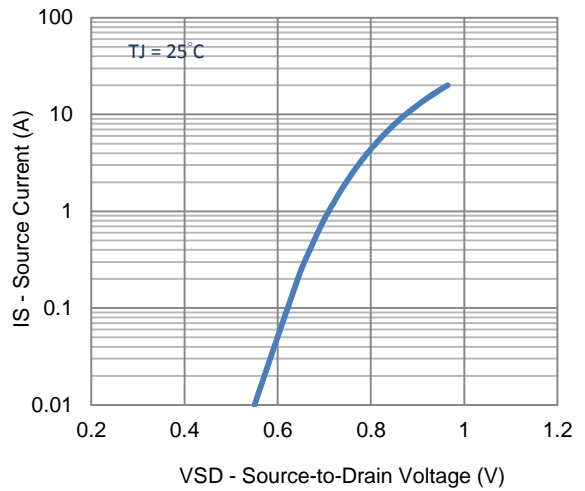
1. On-Resistance vs. Drain Current



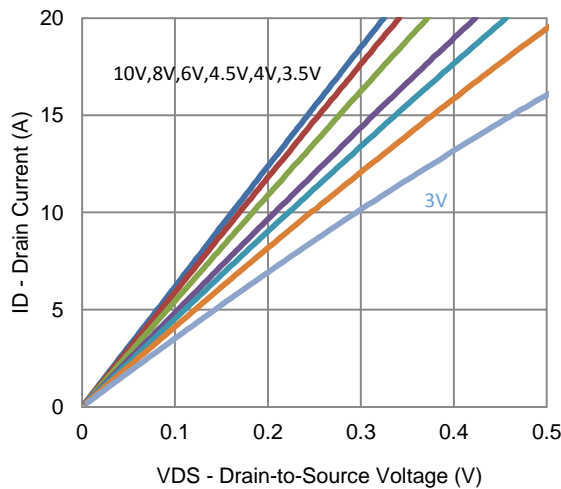
2. Transfer Characteristics



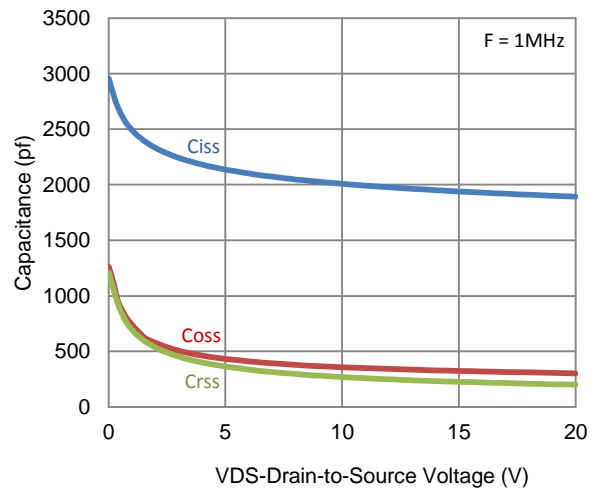
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

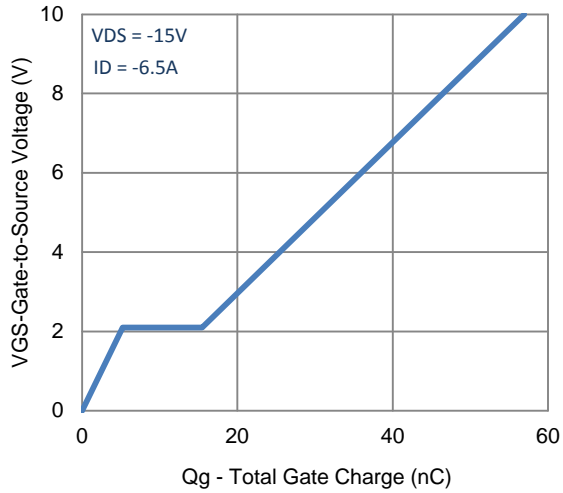


5. Output Characteristics

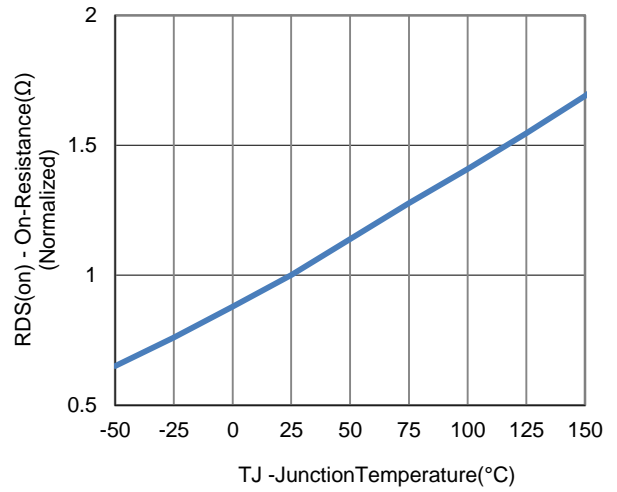


6. Capacitance

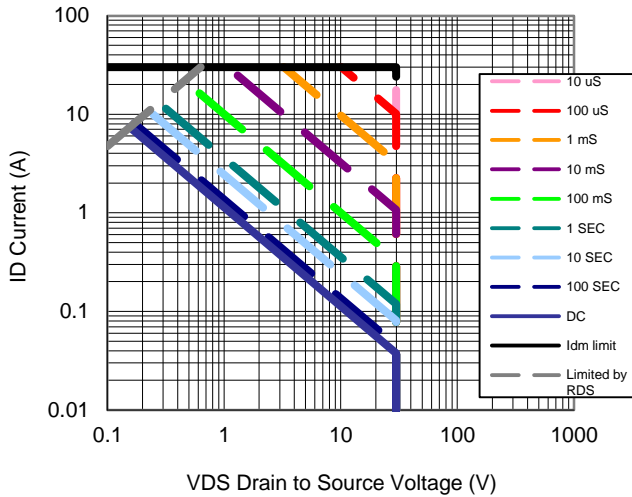
Typical Electrical Characteristics



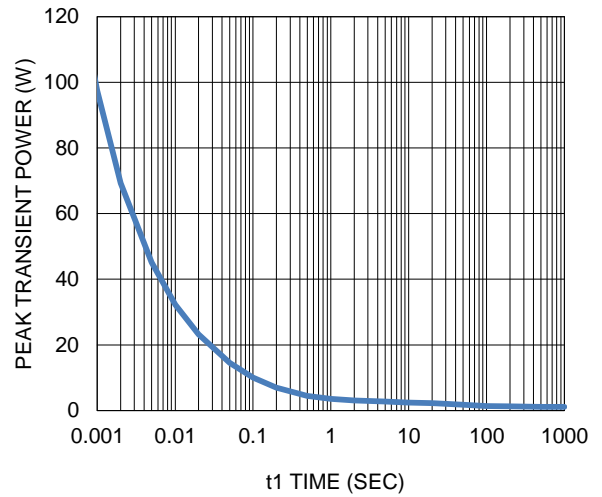
7. Gate Charge



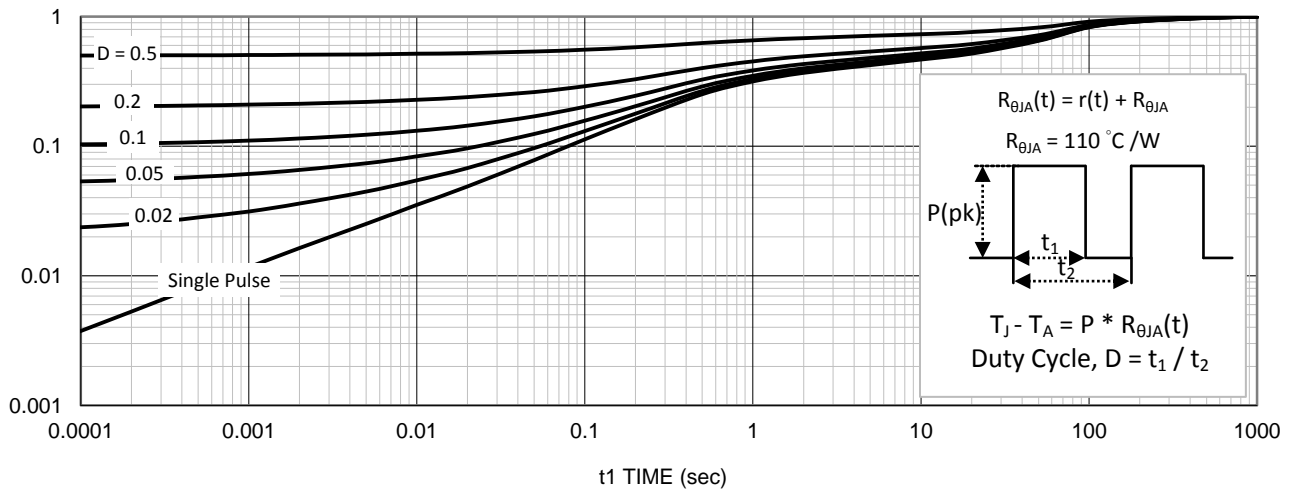
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



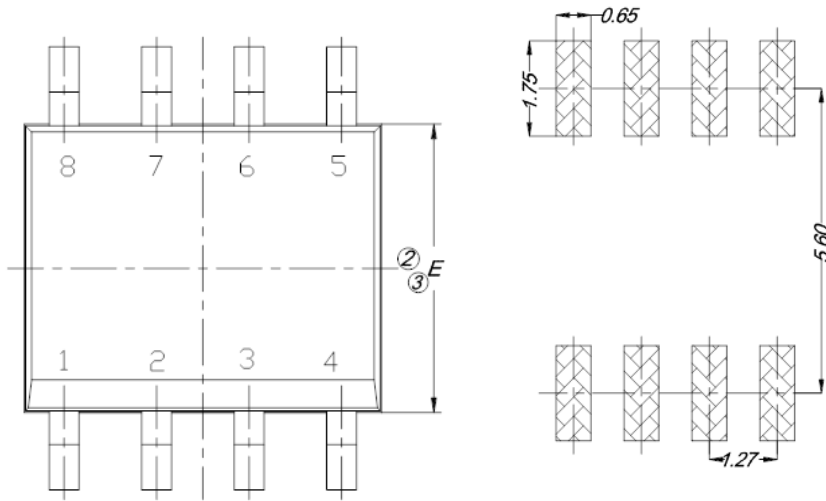
10. Single Pulse Maximum Power Dissipation



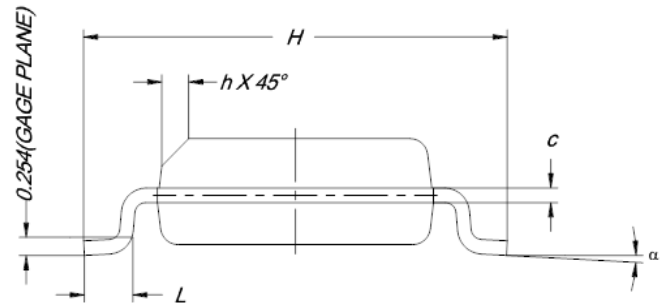
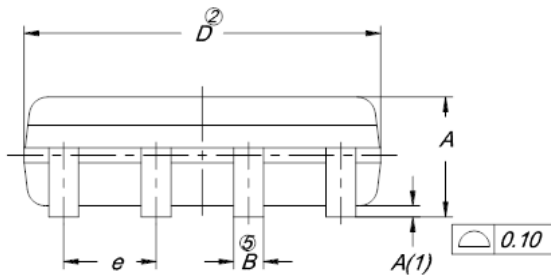
11. Normalized Thermal Transient Junction to Ambient

Package Information

*Land Pattern
(Only for Reference)*



DIM.	MILLIMETERS		
	MIN.	NOM.	MAX.
A	1.35	1.55	1.75
A(1)	0.10	0.18	0.25
B	0.38	0.45	0.51
C	0.19	0.22	0.25
D	4.80	4.90	5.00
E	3.80	3.90	4.00
e	1.27 BSC		
H	5.80	6.00	6.20
L	0.50	0.72	0.93
α	0°	4°	8°
h	0.25	0.38	0.50



Note:

1. All Dimension Are In mm.
2. Package Body Sizes Exclude Mold Flash, Protrusion Or Gate Burrs. Mold Flash, Protrusion Or Gate Burrs Shall Not Exceed 0.10 mm Per Side.
3. Package Body Sizes Determined At The Outermost Extremes Of The Plastic Body Exclusive Of Mold Flash, Tie Bar Burrs, Gate Burrs And Interlead Flash, But Including Any Mismatch Between The Top And Bottom Of The Plastic Body.
4. The Package Top May Be Smaller Than The Package Bottom.
5. Dimension "B" Does Not Include Dambar Protrusion. Allowable Dambar Protrusion Shall Be 0.08 mm Total In Excess Of "B" Dimension At Maximum Material Condition. The Dambar Cannot Be Located On The Lower Radius Of The Foot.