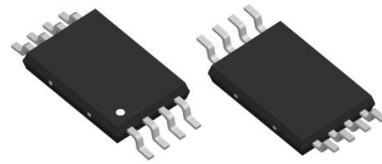
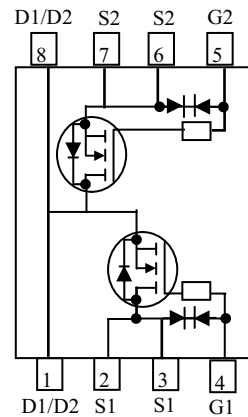


WNMD2172
Dual N-Channel, 20V, 7.0A, Power MOSFET
[Http://www.sh-willsemi.com](http://www.sh-willsemi.com)

V_{DS} (V)	$R_{ds(on)}$ (Ω)
20	0.015@ $V_{GS}=4.5V$
	0.0155@ $V_{GS}=4.0V$
	0.017@ $V_{GS}=3.1V$
	0.018@ $V_{GS}=2.5V$
	0.021@ $V_{GS}=1.8V$
ESD Protected	


TSSOP-8L

Descriptions

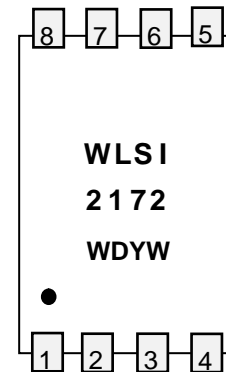
The WNMD2172 is Dual N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WNMD2172 is Pb-free and Halogen-free.

Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- Extremely Low Threshold Voltage
- Small package TSSOP-8L

Applications

- Driver for Relay, Solenoid, Motor, LED etc.
- DC-DC converter circuit
- Power Switch
- Load Switch
- Charging

Pin configuration (Top view)


WLSI = Willsemi
 2172 = Device Code
 WD = Special Code
 Y = Year
 W = Week

Marking
Order information

Device	Package	Shipping
WNMD2172-8/TR	TSSOP-8L	3000/Reel&Tape

Absolute Maximum ratings

Parameter	Symbol	10 s	Steady State	Unit	
Drain-Source Voltage	V_{DS}	20		V	
Gate-Source Voltage	V_{GS}	± 10			
Continuous Drain Current ^a	I_D	$T_A=25^{\circ}C$	7.0	5.9	A
		$T_A=70^{\circ}C$	5.6	4.7	
Maximum Power Dissipation ^a	P_D	$T_A=25^{\circ}C$	1.4	1.0	W
		$T_A=70^{\circ}C$	0.9	0.6	
Continuous Drain Current ^b	I_D	$T_A=25^{\circ}C$	6.2	5.6	A
		$T_A=70^{\circ}C$	5.0	4.5	
Maximum Power Dissipation ^b	P_D	$T_A=25^{\circ}C$	1.1	0.9	W
		$T_A=70^{\circ}C$	0.7	0.5	
Pulsed Drain Current ^c	I_{DM}	30		A	
Operating Junction Temperature	T_J	-55~+150		$^{\circ}C$	
Lead Temperature	T_L	260		$^{\circ}C$	
Storage Temperature Range	T_{stg}	-55 to 150		$^{\circ}C$	

Thermal resistance ratings

Single Operation					
Parameter	Symbol	Typical	Maximum	Unit	
Junction-to-Ambient Thermal Resistance ^a	$R_{\theta JA}$	$t \leq 10$ s	66	87	$^{\circ}C/W$
		Steady State	90	120	
Junction-to-Ambient Thermal Resistance ^b	$R_{\theta JA}$	$t \leq 10$ s	84	108	
		Steady State	110	135	
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	54	71		

a Surface mounted on FR-4 Board using 1 square inch pad size, 1oz copper;.

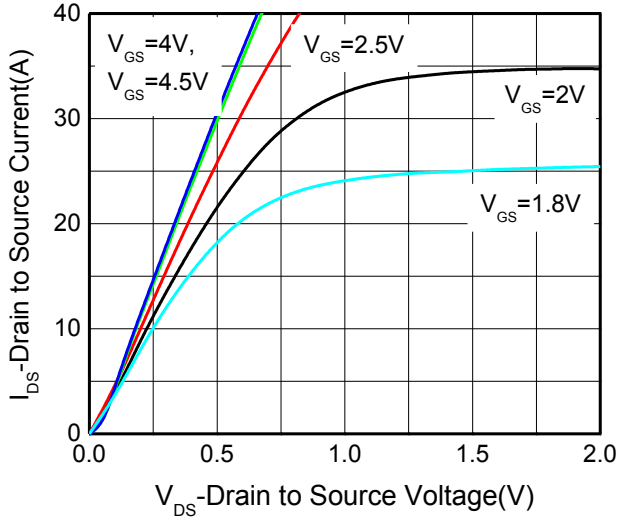
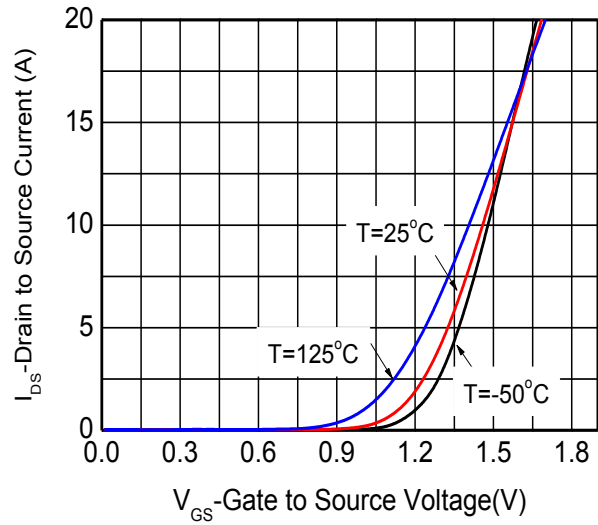
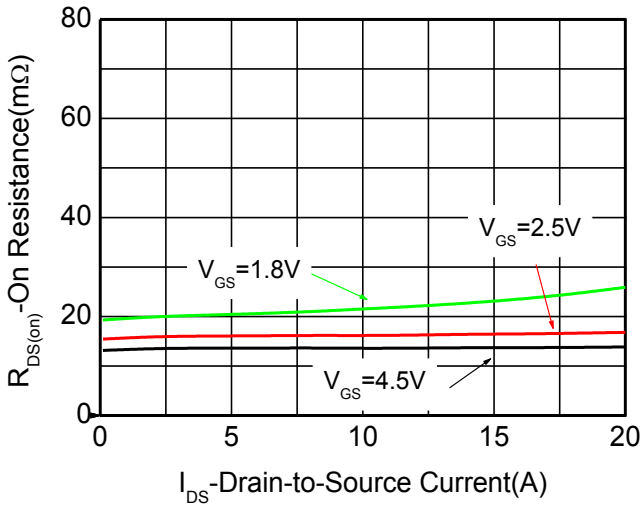
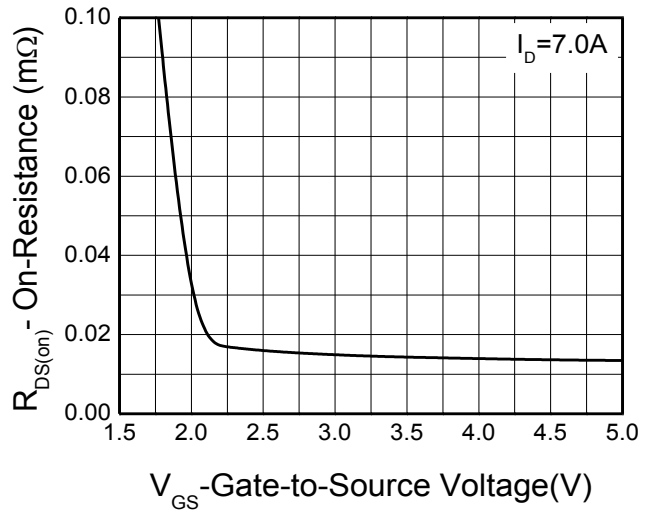
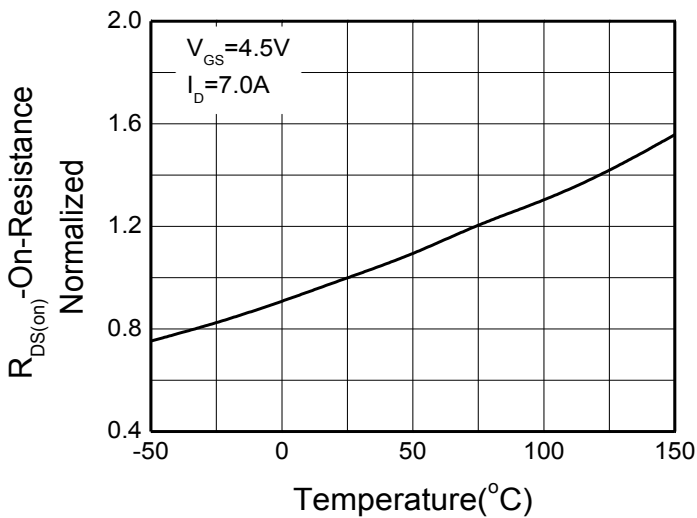
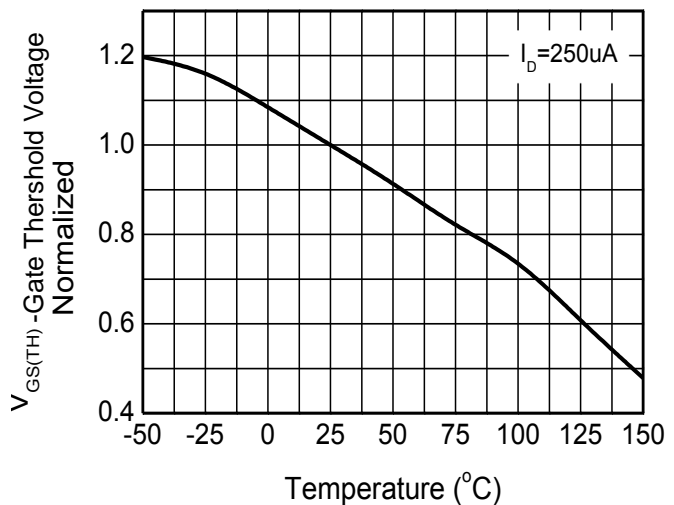
b Surface mounted on FR-4 board using minimum pad size, 1oz copper;.

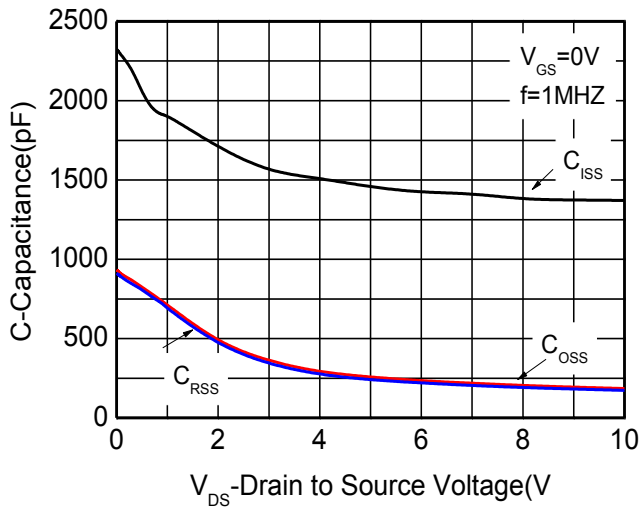
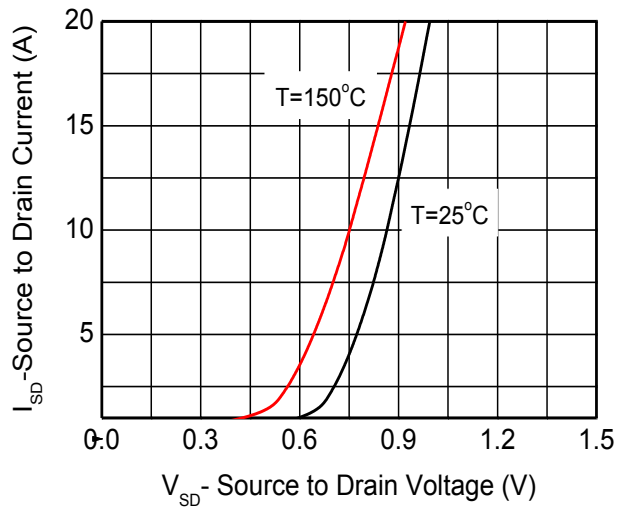
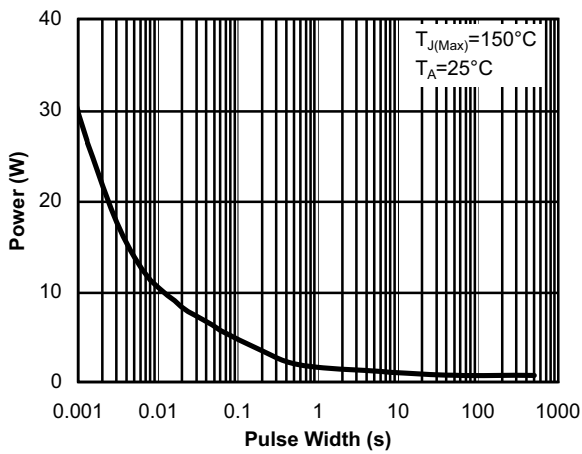
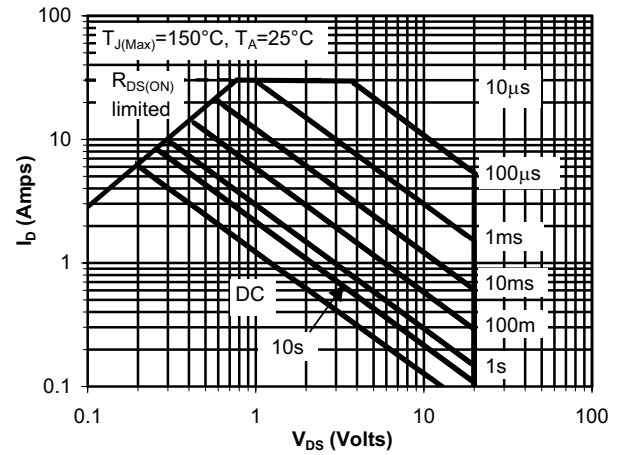
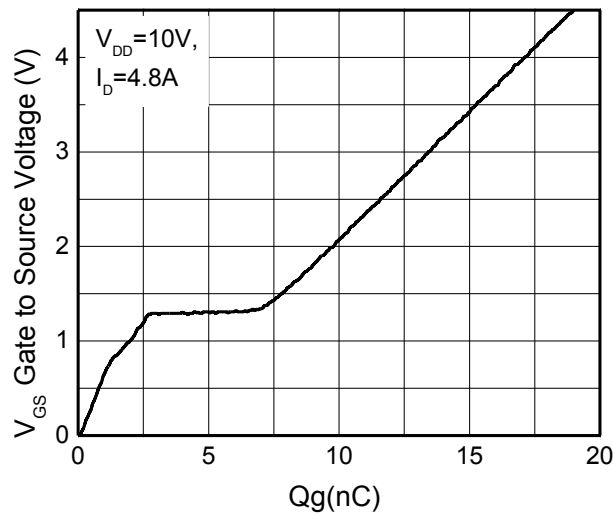
c Pulse width < 380 μ s, Duty Cycle < 2%;.

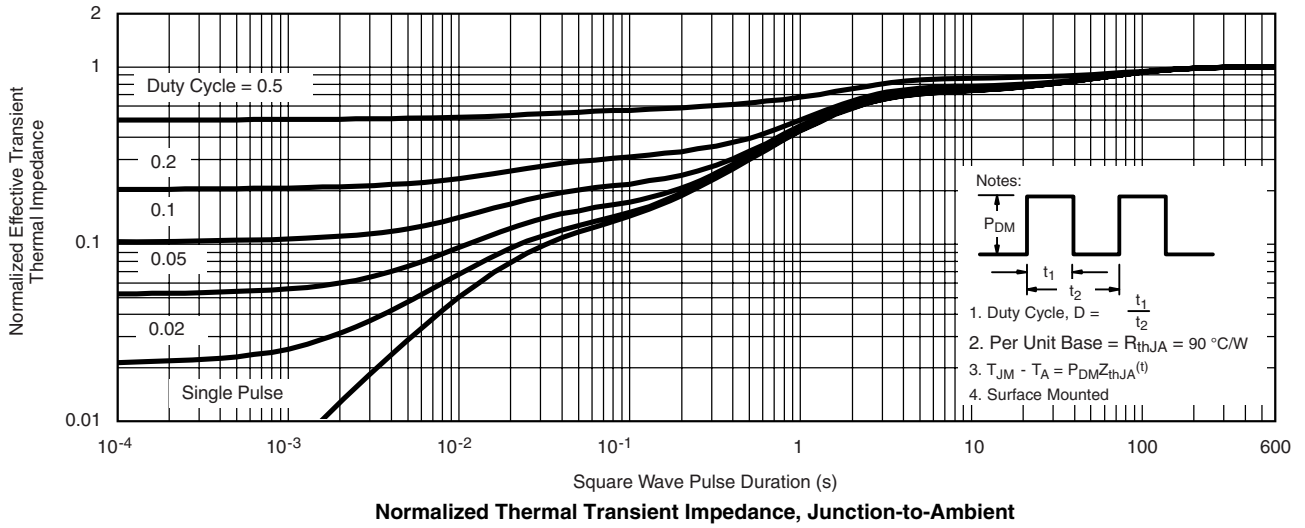
d Maximum junction temperature $T_J=150^{\circ}C$;.

Electronics Characteristics (Ta=25°C, unless otherwise noted)

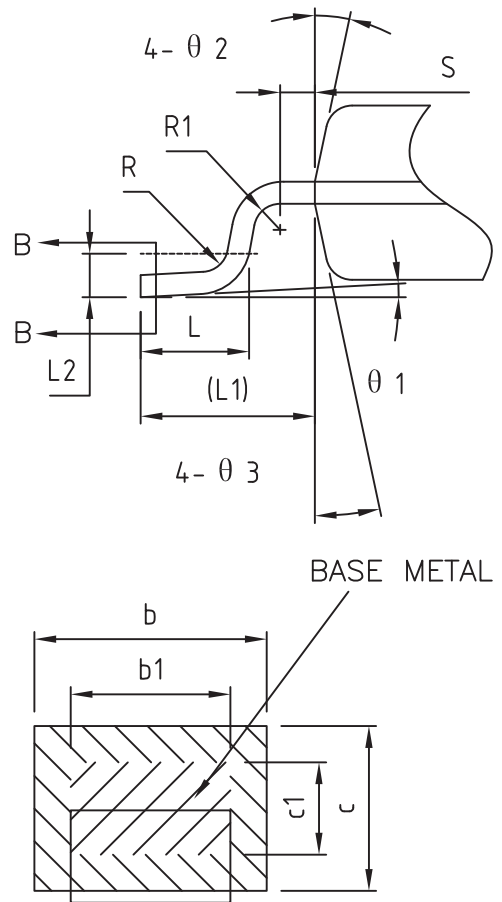
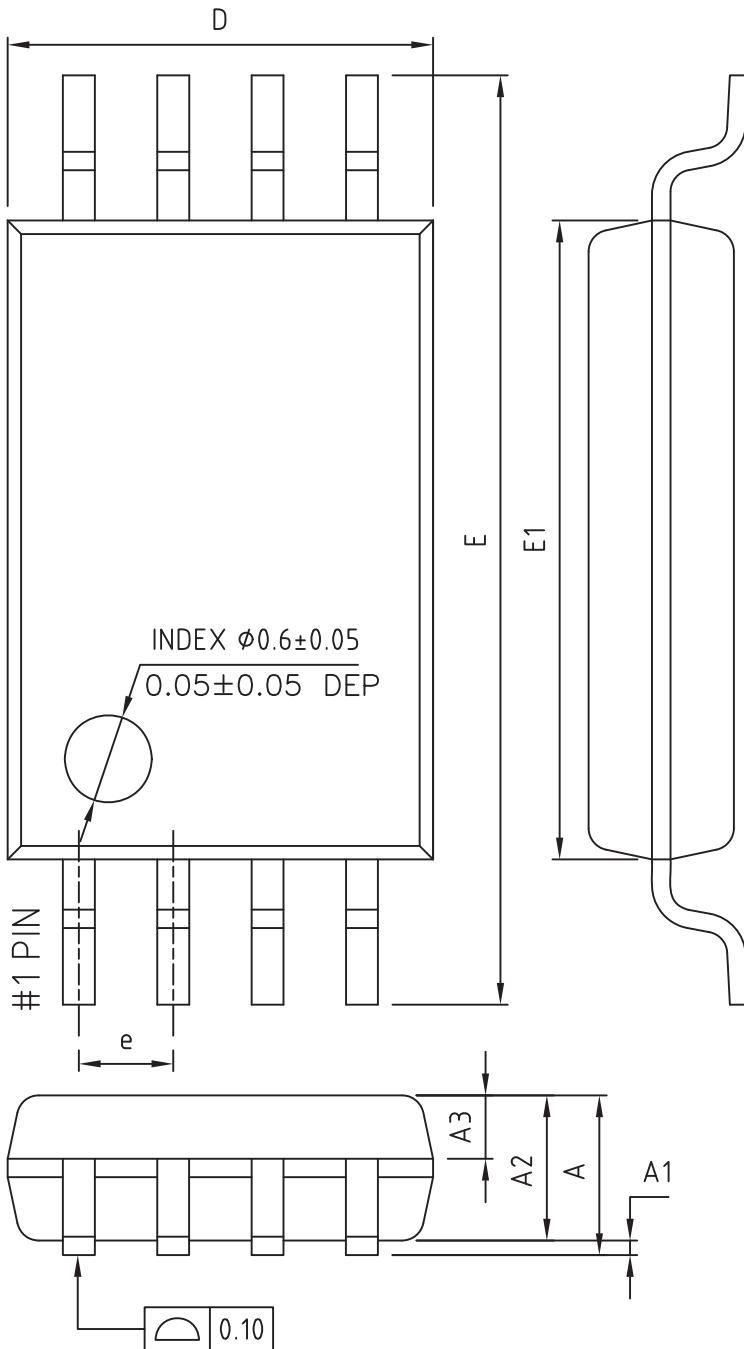
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0\text{ V}, I_D = 250\mu\text{A}$	20			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 16\text{ V}, V_{GS} = 0\text{ V}$			1	μA
Gate-to-source Leakage Current	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 10\text{ V}$			± 10	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\mu\text{A}$	0.4	0.7	1.0	V
Drain-to-source On-resistance	$R_{DS(on)}$	$V_{GS} = 4.5\text{ V}, I_D = 7.0\text{ A}$	11	15	20	m Ω
		$V_{GS} = 4.0\text{ V}, I_D = 7.0\text{ A}$	11.5	15.5	22	
		$V_{GS} = 3.1\text{ V}, I_D = 6.5\text{ A}$	12	17	23	
		$V_{GS} = 2.5\text{ V}, I_D = 6.5\text{ A}$	12.5	18	25	
		$V_{GS} = 1.8\text{ V}, I_D = 5.0\text{ A}$	15	21	30	
Forward Transconductance	g_{FS}	$V_{DS} = 5.0\text{ V}, I_D = 7.0\text{ A}$		18		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	$V_{GS} = 0\text{ V}, f = 1.0\text{ MHz}, V_{DS} = 10\text{ V}$		1371		pF
Output Capacitance	C_{OSS}			185		
Reverse Transfer Capacitance	C_{RSS}			172		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = 4.5\text{ V}, V_{DD} = 10\text{ V}, I_D = 4.8\text{ A}$		18.9		nC
Threshold Gate Charge	$Q_{G(TH)}$			1.3		
Gate-to-Source Charge	Q_{GS}			2.8		
Gate-to-Drain Charge	Q_{GD}			6.4		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_d(ON)$	$V_{GS} = 4.5\text{ V}, V_{DD} = 6\text{ V}, I_D = 4.8\text{ A}, R_G = 6\ \Omega$		29		ns
Rise Time	t_r			35		
Turn-Off Delay Time	$t_d(OFF)$			260		
Fall Time	t_f			125		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	$V_{GS} = 0\text{ V}, I_S = 1.0\text{ A}$		0.65	1.5	V

Typical Characteristics (Ta=25°C, unless otherwise noted)

Output characteristics

Transfer characteristics

On-Resistance vs. Drain current

On-Resistance vs. Gate-to-Source voltage

On-Resistance vs. Junction temperature

Threshold voltage vs. Temperature


Capacitance

Body diode forward voltage

Single pulse power

Safe operating power(Note.e)

Gate Charge Characteristics



Package outline dimensions(ALL DIMENSIONS DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS)

TSSOP-8L

 COMMON DIMENSIONS
 (UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	—	—	1.20
A1	0.05	—	0.15
A2	0.90	1.00	1.05
A3	0.34	0.44	0.54
b	0.20	—	0.28
b1	0.20	0.22	0.24
c	0.10	—	0.19
c1	0.10	0.13	0.15
D	2.83	2.93	3.03
E	6.20	6.40	6.60
E1	4.30	4.40	4.50
e	0.65BSC		
L	0.45	0.60	0.75
L1	1.00REF		
L2	0.25BSC		
R	0.09	—	—
R1	0.09	—	—
S	0.20	—	—
$\theta 1$	0°	—	8°
$\theta 2$	10°	12°	14°
$\theta 3$	10°	12°	14°