

Features

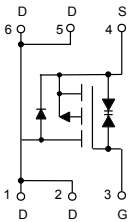
- Excellent $R_{DS(ON)}$ Low Gate Charge, Low Gate Voltages
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 89.3°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Drain -source Voltage	V_{DS}	-20	V
Gate -Source Voltage	V_{GS}	±8	V
Drain Current-Continuous	I_D	-4.0	A
Drain Current-Pulse ^(Note 1)	I_{DM}	-30	A
Power Dissipation	P_D	1.40	W

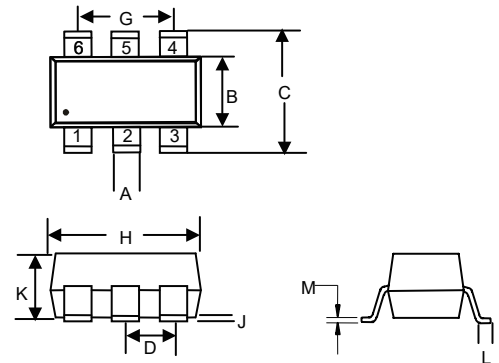
Internal Structure



Marking:R15

P-Channel MOSFET

SOT23-6L



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.012	0.020	0.30	0.50	
B	0.051	0.070	1.30	1.80	
C	0.087	0.126	2.20	3.20	
D	0.037		0.95		TYP.
G	0.074		1.90		TYP.
H	0.106	0.122	2.70	3.10	
J	0.002	0.006	0.05	0.15	
K	0.030	0.051	0.75	1.30	
L	0.012	0.024	0.30	0.60	
M	0.003	0.008	0.08	0.22	

ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20			V
Gate-Threshold Voltage ^(Note 2)	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.30	-0.56	-1.0	V
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 8V, V_{DS} = 0V$			± 10	μA
		$V_{GS} = \pm 4.5V, V_{DS} = 0V$			± 1	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -16V, V_{GS} = 0V$			-1	μA
Drain-Source On-Resistance ^(Note 2)	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -4.0A$		37	50	m Ω
		$V_{GS} = -2.5V, I_D = -4.0A$		45	60	
		$V_{GS} = -1.8V, I_D = -2.0A$		56	73	
Forward Transconductance ^(Note 2)	g_{FS}	$V_{DS} = -5V, I_D = -4.0A$	8	16		S
Diode Forward Current	I_S				-4	S
Diode Forward Voltage ^(Note 2)	V_{SD}	$V_{GS} = 0V, I_S = -4A$			-1.0	V
Dynamic Characteristics^(Note 4)						
Input Capacitance	C_{iss}	$V_{DS} = -10V, V_{GS} = 0V, f = 1MHz$		1450		pF
Output Capacitance	C_{oss}			205		
Reverse Transfer Capacitance	C_{rss}			160		
Switching Characteristics^(Note 3)						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -10V, V_{GS} = -4.5V, R_L = 2.5\Omega, R_{GEN} = 3\Omega$		9.5		ns
Turn-On Rise Time	t_r			17		
Turn-Off Delay Time	$t_{d(off)}$			94		
Turn-Off Fall Time	t_f			35		
Total Gate Charge	Q_g	$V_{DS} = -10V, V_{GS} = -4.5V, I_D = -4A$		17.2		nC
Gate-Source Charge	Q_{gs}			1.3		
Gate-Drain Charge	Q_{gd}			4.5		

Note:

1. Repetitive rating, pulse width limited by junction temperature.
2. Pulse Test : Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. These parameters have no way to verify.

Curve Characteristics

Fig. 1 - Output Characteristics

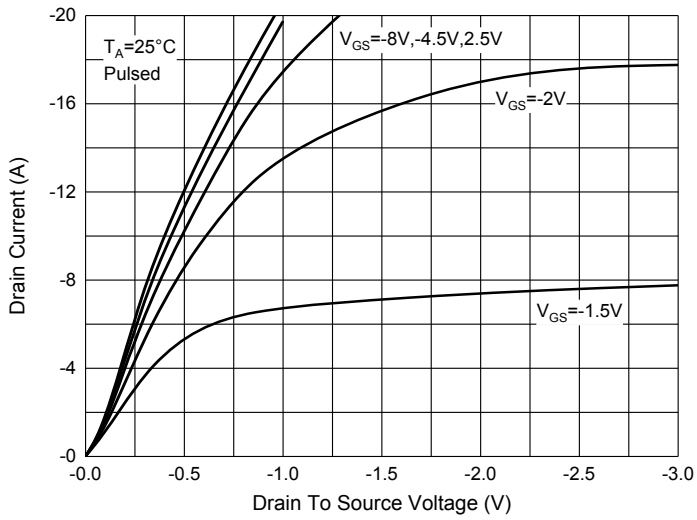


Fig. 2 - Transfer Characteristics

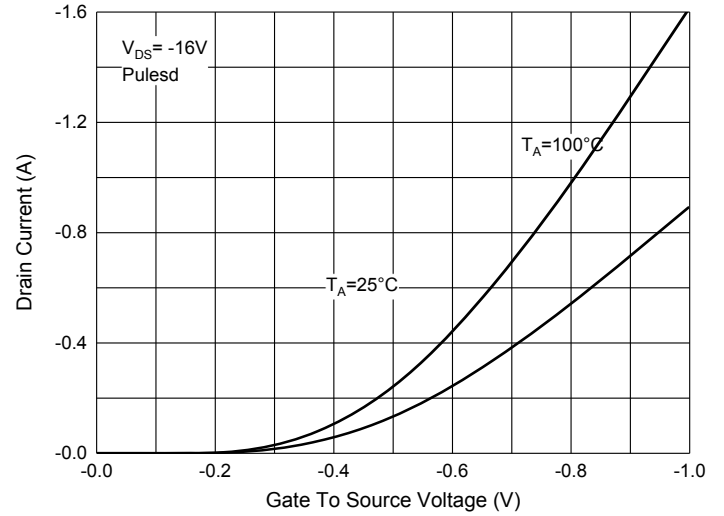


Fig. 3 - $R_{DS(ON)} - I_D$

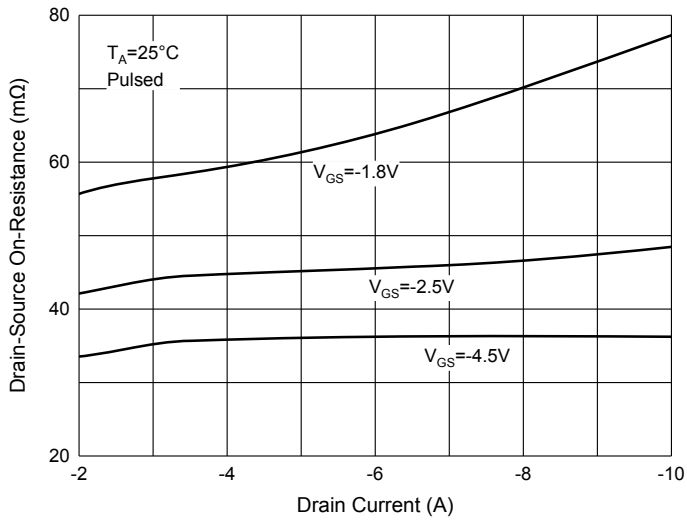


Fig. 4 - $R_{DS(ON)} - V_{GS}$

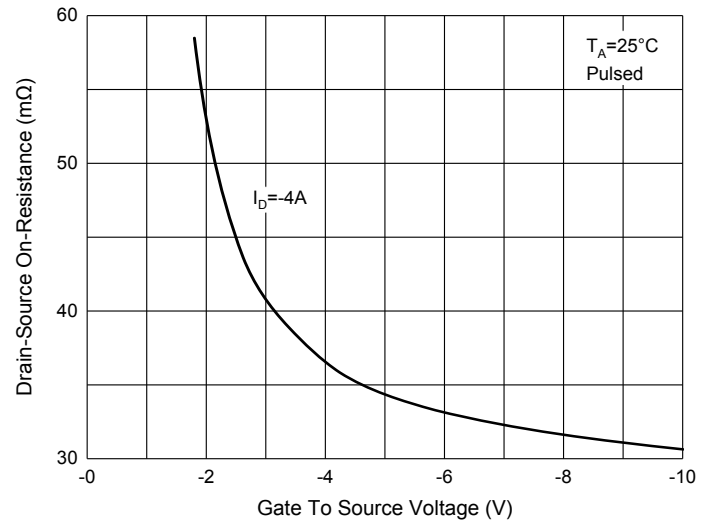


Fig. 5 - $I_S - V_{SD}$

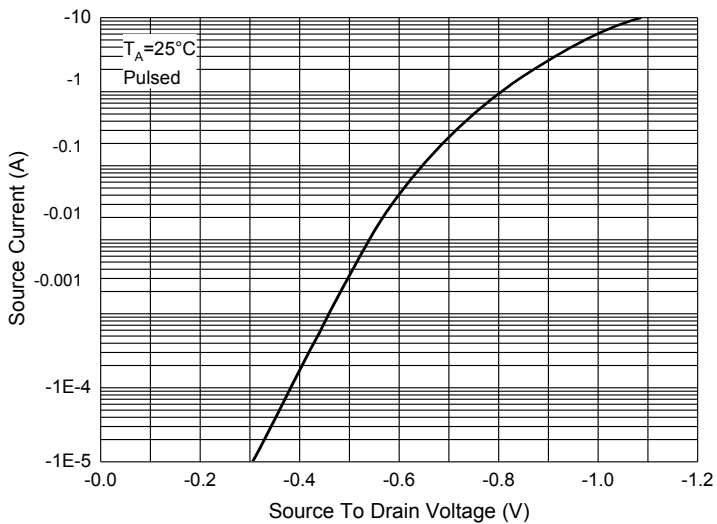
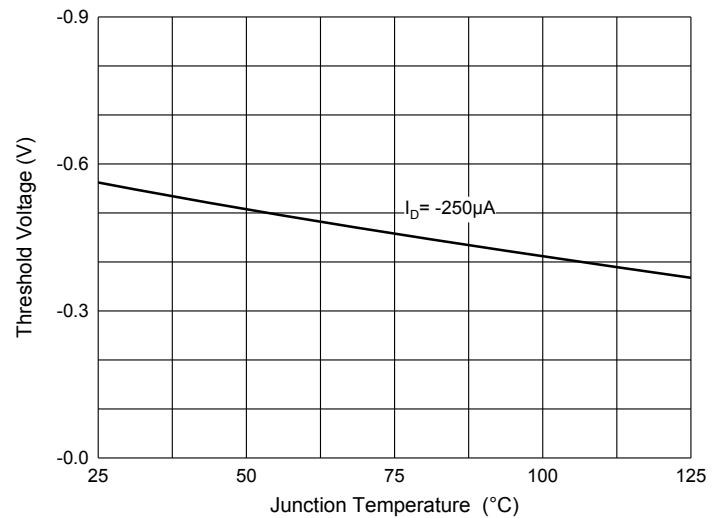


Fig. 6 - Threshold Voltage



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel:3Kpcs/Reel

Note : Adding "-HF" Suffix For Halogen Free, eg. Part Number-TP-HF

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