

RoHS Compliant Product
A suffix of "-C" specifies halogen and lead-free

DESCRIPTION

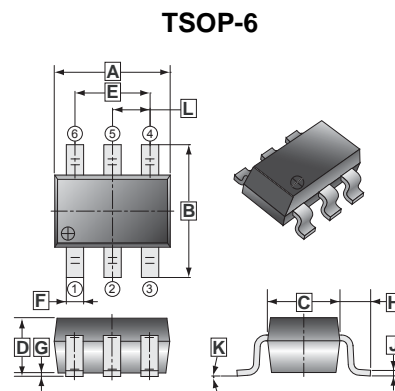
These miniature surface mount MOSFETs utilize High Cell Density process. Low $R_{DS(on)}$ assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry. Typical applications are DC-DC converters, power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

FEATURES

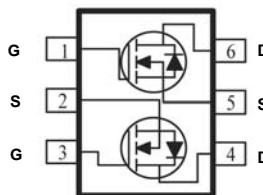
- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Miniature TSOP-6 surface mount package saves board space.

PRODUCT SUMMARY

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$V_{DS}(V)$	$R_{DS(on)} (\Omega)$	$I_D(A)$
60	0.153@ $V_{GS}=10V$	2.3
	0.185@ $V_{GS}=4.5V$	2.1



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0	0.10
B	2.60	3.00	H	0.60	REF.
C	1.40	1.80	J	0.12	REF.
D	1.10	MAX.	K	0°	10°
E	1.90	REF.	L	0.95	REF.
F	0.30	0.50			



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

Parameter	Symbol	Ratings	Unit
		Maximum	
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ^a	$I_D @ T_A=25^\circ C$	2.3	A
	$I_D @ T_A=70^\circ C$	1.9	
Pulsed Drain Current ^b	I_{DM}	8	A
Continuous Source Current (Diode Conduction) ^a	I_S	1.05	A
Power Dissipation ^a	$P_D @ T_A=25^\circ C$	1.15	W
	$P_D @ T_A=70^\circ C$	0.7	
Operating Junction and Storage Temperature Range	T_j, T_{stg}	-55 ~ 150	$^\circ C$

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Maximum	Unit
Maximum Junction to Ambient ^a	$t \leq 10$ sec	$R_{\theta JA}$	100	$^\circ C / W$
	Steady State		166	

Notes

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

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Gate-Threshold Voltage	$V_{GS(th)}$	1	-	-	V	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$
Gate-Body Leakage Current	I_{GSS}	-	-	100	μA	$V_{DS}=0\text{V}$, $V_{GS}=20\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	$V_{DS}=48\text{V}$, $V_{GS}=0\text{V}$
		-	-	10		$V_{DS}=48\text{V}$, $V_{GS}=0\text{V}$, $T_J=55^\circ\text{C}$
On-State Drain Current ^a	$I_{D(on)}$	5	-	-	A	$V_{DS}=5\text{V}$, $V_{GS}=10\text{V}$
Drain-Source On-Resistance ^a	$R_{DS(ON)}$	-	-	0.153	Ω	$V_{GS}=10\text{V}$, $I_D=2.3\text{A}$
		-	-	0.185		$V_{GS}=4.5\text{V}$, $I_D=2.1\text{A}$
Forward Transconductance ^a	g_{fs}	-	10	-	S	$V_{DS}=5\text{V}$, $I_D=2.3\text{A}$
Diode Forward Voltage ^a	V_{SD}	-	0.80	-	V	$I_S=1.05\text{A}$, $V_{GS}=0\text{V}$
DYNAMIC ^b						
Total Gate Charge	Q_g	-	3	-	nC	$V_{DS}=15\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=2.3\text{A}$
Gate-Source Charge	Q_{gs}	-	0.6	-		
Gate-Drain Charge	Q_{gd}	-	1.0	-		
Turn-on Delay Time	$T_{d(on)}$	-	5	-	nS	$V_{DD}=15\text{V}$, $V_{GS}=4.5\text{V}$, $R_{GEN}=15\Omega$, $I_D=1\text{A}$
Rise Time	T_r	-	12	-		
Turn-off Delay Time	$T_{d(off)}$	-	13	-		
Fall Time	T_f	-	7	-		

Notes

- Pulse test : $PW \leq 300 \mu\text{s}$ duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.

CHARACTERISTIC CURVES

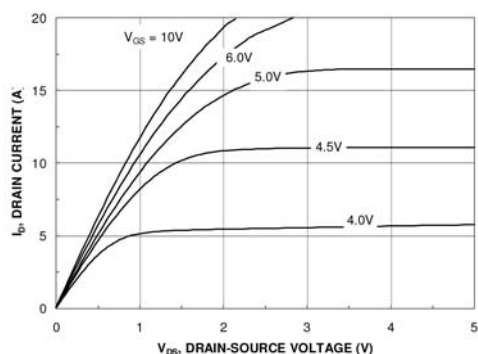


Figure 1. On-Region Characteristics.

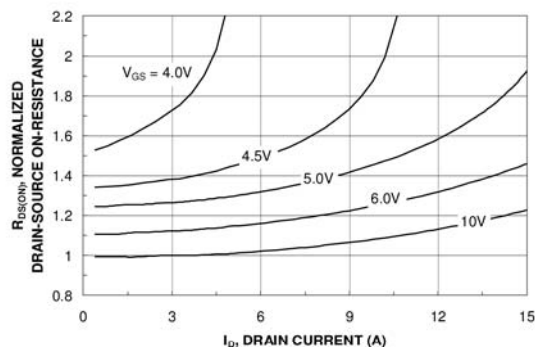


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage.

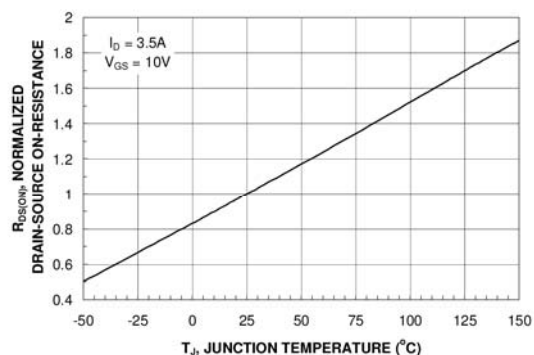


Figure 3. On-Resistance Variation with Temperature.

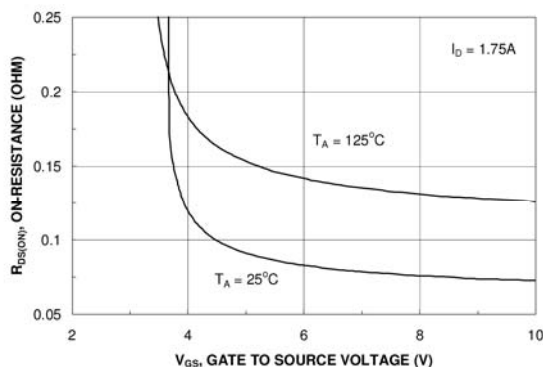
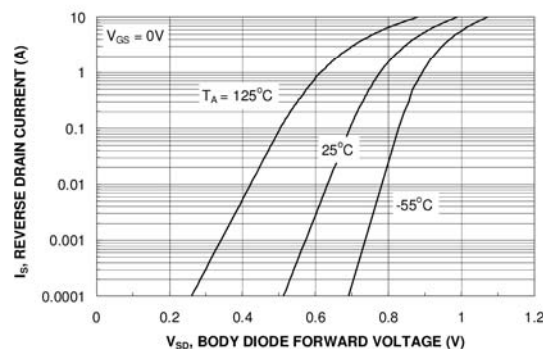
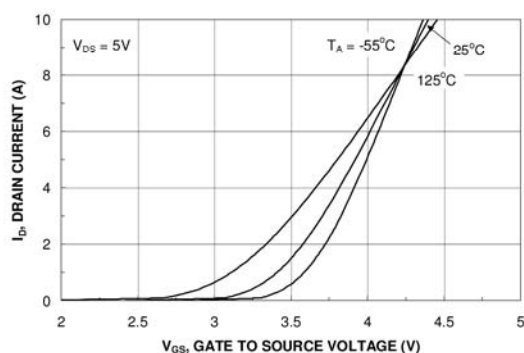


Figure 4. On-Resistance Variation with Gate-to-Source Voltage.



CHARACTERISTIC CURVES

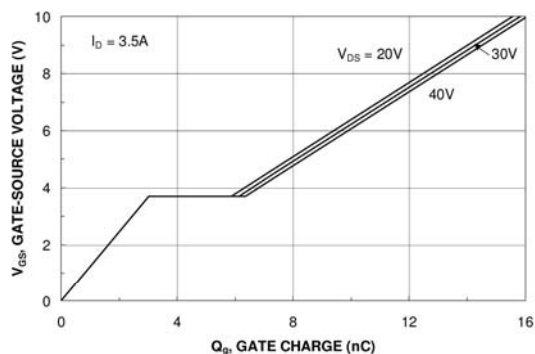


Figure 7. Gate Charge Characteristics.

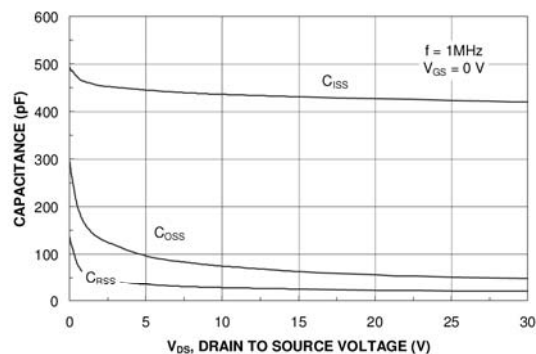


Figure 8. Capacitance Characteristics.

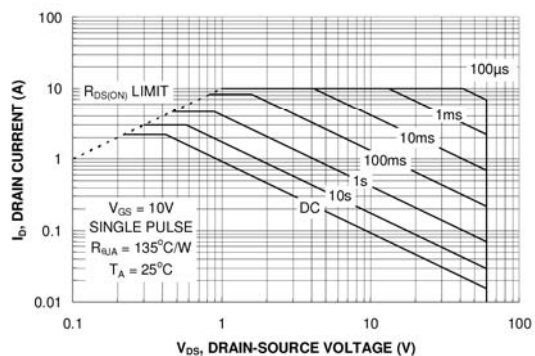


Figure 9. Maximum Safe Operating Area.

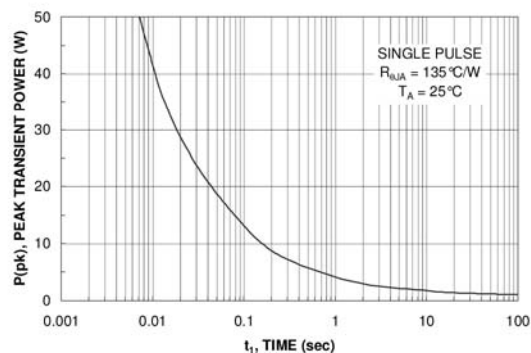


Figure 10. Single Pulse Maximum Power Dissipation.

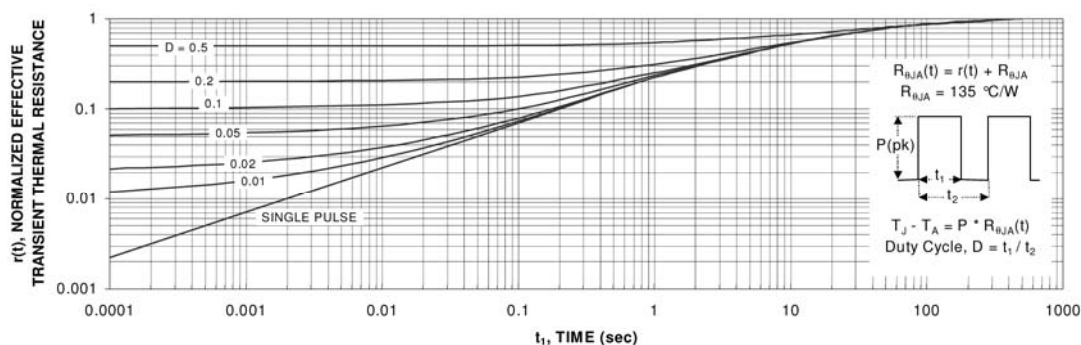


Figure 11. Transient Thermal Response Curve.

Thermal characterization performed using the conditions described in Note 1c.
Transient thermal response will change depending on the circuit board design.